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# Indonesia: Appraisal of a Nutrition Development Project

February 16, 1977

Agriculture and Rural Development Department

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### CURRENCY EQUIVALENTS

US\$1	=	Rupiahs (Rp) 415
Rp 1	=	US\$0.002
Rp 1,000,000	=	US\$2,410

### WEIGHTS AND MEASURES

1 metric ton	=	1,000 kilograms (kg)	=	2205 pounds	=	0.98 long ton
1 meter (m)	=	29.37 inches	=	3.28 feet	=	1.09 yards
1 hectare (ha)	=		=	10,000 m <sup>2</sup>	=	2.47 acres
1 square kilometer (km <sup>2</sup> )	=		=	100 ha	=	0.39 square miles

### ABBREVIATIONS

AETE	=	Agency for (Agricultural) Education, Training and Extension
ANP	=	Applied Nutrition Program
ANPO	=	Assistant Nutrition Program Officer
ARD	=	Agency for (Agricultural) Research and Development
BAPPEDA	=	Provincial Planning Authority
BAPPENAS	=	National Development and Planning Agency
BIMAS/INMAS	=	Mass Guidance Program for Self-sufficiency in Rice and Palawija Crops
BPDG	=	Nutrition Improvement Coordinating Committee
BULOG	=	National Logistics Body - rice procurement agency
BUUD/XUD	=	Local Village Cooperative
CARE	=	Cooperative for American Relief Everywhere
CRDN	=	Center for Research and Development in Nutrition
FAO	=	Food and Agriculture Organization
FNU	=	Food and Nutrition Unit
FTDC	=	Food Technology Development Center
IPB	=	Agricultural University, Bogor
IRRI	=	International Rice Research Institute
MCH	=	Maternal and Child Health
MEU	=	Monitoring and Evaluation Unit
NILHOH	=	National Institute for Industrial Hygiene and Occupational Health
NIPP	=	Nutrition Intervention Pilot Project
NPO	=	Nutrition Program Officer
NRI	=	Nutrition Research Institute
PCM	=	Protein-Calorie Malnutrition
PKK	=	Members of Voluntary Organizations
PMD	=	Community Development Board
REC	=	Rural Extension Center
RILHOH	=	Regional Institute of Industrial Hygiene and Occupational Health
TAC	=	Technical Advisory Committee
UDKP	=	Units for Community Development
UNICEF	=	United Nations Children's Fund
UPGK	=	Unit for Family Health and Nutrition
USAID	=	United States Agency for International Development
VANPO	=	Village Assistant Nutrition Program Officer
WFP	=	World Food Program
WHO	=	World Health Organization

### GLOSSARY

Bupati	=	Chief Executive of the Kabupaten
BUTSI	=	Indonesian Village Youth Corps
Camat	=	Executive Head of Sub-district
INPRES	=	Presidential Instruction
Kabupaten	=	Administrative Sub-division of a Province
Kampung	=	Villages
Kecamatan	=	Sub-district Level of Provinces
Lurah	=	Village Headman or Chief
Walikota	=	Chief Executives of Sub-district

APPRAISAL REPORT ON A PROPOSED NUTRITION DEVELOPMENTPROJECT IN INDONESIATABLE OF CONTENTS

	<u>Page No.</u>
<u>SUMMARY AND CONCLUSION</u>	i - v
I. <u>INTRODUCTION</u> .....	1
II. <u>BACKGROUND</u> .....	2
A. Nutrition and Economic Development .....	2
B. The Nutrition Problem .....	4
C. Causes of Malnutrition .....	6
D. Actions to Counter Malnutrition .....	8
E. Existing Institutional and Organizational Structures for Nutrition Activities .....	10
III. <u>THE PROJECT</u> .....	11
A. Goals and Strategy .....	11
B. Project Description .....	12
C. Linkages of the Proposed Nutrition Project with Ongoing Projects Assisted by the Bank .....	14
D. Detailed Features .....	15
- Center for Research and Development in Nutrition .....	15
- Food Technology Development Center .....	16
- Direct Nutrition Action Programs .....	17
- The Nutrition Intervention Pilot Project .....	17
- Action Program for Home/Village Gardens .....	20
- Action Program for On-Farm and Village Level Storage .....	21
- Anemia Prevention and Control Pilot Project - Plantations .....	21
- Nutrition Communication and Behavioral Change ...	22
- Nutrition Manpower Training .....	24
- Assistance for Formulation of a National Food and Nutrition Program .....	25
- Capital Works .....	25
- Technical Assistance .....	26
IV. <u>COSTS, FINANCING, PROCUREMENT AND DISBURSEMENTS</u> .....	26

This report is based on the findings of an appraisal mission which visited Indonesia in August 1975. The appraisal mission consisted of: Mr. S. Venkitaramanan (Chief of Mission), Dr. K. V. Ranganathan, Dr. T. Tiglao, Mr. A. Shaw, Mr. D. Mills, Mr. E. Thomson, Mr. J. Worgan and Dr. M. Behar (Consultants). Mr. Venkitaramanan made an updating mission in February 1976. A post-appraisal mission was made in June/July 1976 by Messrs. E. M. Schebeck (Chief of Mission), S. Venkitaramanan and E. Thomson. The missions were greatly assisted by Bank Resident Mission representatives.

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	<u>Page No.</u>
V. <u>ORGANIZATION AND MANAGEMENT</u> .....	31
A. Project Organization .....	31
B. Monitoring and Evaluation .....	33
VI. <u>BENEFITS AND JUSTIFICATION</u> .....	35
VII. <u>AGREEMENTS REACHED</u> .....	38

ANNEXES

1. Nutritional Status and Food Habits
2. Center for Research and Development of Nutrition
3. Food Technology Development Center
4. Nutrition Intervention Pilot Program
5. Anemia Prevention and Control Pilot Project
6. Nutrition Communication and Behavioral Change
7. Manpower Training
- 8a. Project Organization
- 8b. Food and Nutrition Unit, Ministry of Agriculture
9. Monitoring and Evaluation
10. Civil Works
11. Project Cost Estimates
12. Disbursement Schedule
13. Schedule of Technical Assistance
14. Schedule of Key Implementation Actions

## INDONESIA NUTRITION DEVELOPMENT PROJECT

### SUMMARY AND CONCLUSIONS

(i) Despite significant improvements in real per capita incomes in Indonesia in recent years, widespread malnutrition represents a constraint on human productive capacity that hinders efforts to achieve national development goals. Malnutrition could be more effectively combated if nutrition problems were better understood and if the institutions and personnel required were developed to plan and conduct an effective national-scale program of research and development and of action.

(ii) Indonesia's development program addresses directly the problems of employment, production, and income generation. Successful execution of the program will have a significant impact on the nutritional status of the population. Yet, actions to increase employment, output and incomes are not by themselves sufficient to deal with the problems of malnutrition, particularly of those who now, and probably for many years to come, will be living in poverty. In the context of Indonesia's overall development strategy, nutrition activities are complementary to other efforts in agriculture, health and education. Well directed nutrition policies and programs can lower mortality and morbidity rates, contribute to raising productivity levels, help to achieve family planning and education objectives, optimize the use of available food resources, and improve the level of human well-being which is the ultimate goal of all development activities. Nutrition programs also serve as a direct means of improving income distribution and the social and economic conditions of the disadvantaged portion of the population.

(iii) Nutrition problems - particularly protein-calorie malnutrition (PCM), vitamin A and iodine deficiencies, and nutritional anemia - are widespread throughout Indonesia. The high rate of infant mortality - between 110 and 150 per 1,000 - can be traced in part to PCM. Malnutrition in Indonesia is a result of a combination of different factors, foremost of which are: inadequate production and inadequate availability of foods, and especially nutritionally valuable foods, to a large proportion of the population; and insufficient understanding of nutritional requirements.

(iv) Indonesia's daily average per capita availability of food is about 1,880 calories and 43 daily grams of protein compared to a recommended requirement of about 1,920 calories and 40 grams of protein. However, given the income distribution in Indonesia, almost two-thirds of the population is getting well below the required amounts. Since the First Development Plan period (1969-74), the Government has concentrated on increased production of rice, the main staple food, in an effort to keep pace with growing requirements.

(v) At the same time, the Government has become increasingly concerned about the prevalence of malnutrition among its population and has committed itself to improving this situation. Past Indonesian efforts, supported by

UNICEF, WHO, CARE and FAO, to achieve nutritional improvements have had only moderate success because of their rather limited size and coverage. The proposed project, which was prepared by an Indonesian task force, builds on the experience from these activities. The Government's commitment towards improving the nutritional status of Indonesia's poor is reflected by its intention to develop and implement a comprehensive national nutrition program. However, it now lacks basic prerequisites: sufficient manpower and institutional capacity capable of planning and executing large-scale programs, knowledge concerning the effectiveness of alternative forms of nutrition interventions and delivery systems, and an adequate data base from which to analyse the effectiveness of possible nutrition activities.

(vi) The purpose of the proposed project is threefold. First, it will strengthen and expand the existing nucleus of personnel and institutions in Indonesia to develop more effective capacity for: formulation and execution and evaluation of nutrition programs; operational research; and manpower training in nutrition. Second, through field level action programs and their evaluation, nationally replicable and cost-effective measures will be developed to improve the nutritional status of malnourished target groups. Third, the combination of the above actions will aid the Government in the formulation and execution of a more comprehensive food and nutrition program on a national scale. More specifically, the proposed project, consisting of several parallel components, would assist the Government in:

(a) Institution Building

- (i) strengthen the Center for Research and Development in Nutrition (CRDN), under the Ministry of Health, through funds for additional staff, training, technical assistance, necessary equipment and modest expansion of physical facilities;
- (ii) support the establishment of the Food Technology Development Center (FTDC), under the Ministry of Education, at the Agricultural University, with physical facilities, equipment, training, technical assistance and additional staff;
- (iii) improve planning, coordination and evaluation of nutrition activities through provision of technical assistance to the Ministries of Health, Education and Agriculture;

(b) Direct Nutrition Action Programs

- (i) initiate a Nutrition Intervention Pilot Project (NIPP) - administered by the Ministry of Health - through funds for additional staff, training, technical assistance, buildings, equipment and materials

to provide integrated nutritional, educational, agricultural and health activities and selective food supplementation to vulnerable target groups in seven Kabupatens, with a total population of about 740,000;

- (ii) increase the production of nutritious vegetables and fruits in 18,000 home/village gardens through provision of improved seeds, development of model garden packages and intensification of agricultural extension efforts;
  - (iii) improve food storage, especially at the village level through assistance to the Food Technology Development Center which would, in collaboration with the Ministry of Agriculture, develop an appropriate small-scale storage program for a total capacity of 300 tons for which financing would be provided;
  - (iv) initiate an iron supplementation program administered under the National Institute for Industrial Hygiene and Occupational Health, through funds for iron pills, iron fortified salt, medication and materials to tackle nutritional anemia among 3,000 families in a selected number of plantations with a view to developing a national program to cover all government and privately owned plantations;
- (c) Education and Training
- (i) implement and test the efficiency of alternative nutrition communication methods affecting 110,000 beneficiaries to bring about desirable changes in nutrition behavior through funds for equipment, technical assistance and incremental operating costs;
  - (ii) upgrade and expand the training of nutritionists in the Academy of Nutrition at Jakarta, under the Ministry of Health, by provision of equipment, staff, training, technical assistance and necessary physical facilities;
  - (iii) improve the training of agricultural extensionists by introduction of nutrition in the curriculum of the basic training centers and of the secondary agricultural schools of the Agency for Education, Training and Extension through funds for curriculum development, equipment and instructors; and

(d) Assistance for Formulation of a National Food and Nutrition Program

assist the Government in the formulation of a national food and nutrition program by taking into account inter alia: the results of the evaluation of the various nutrition actions taken under the proposed project and their cost effectiveness and replicability; manpower availability; and the managerial skills and institutions developed as a result of the project.

(vii) Specific linkages would be established between the proposed project and ongoing development activities, including those assisted by the Bank, particularly agricultural research and extension and training, agricultural credit, population programs and others.

(viii) As a result of the project, the Government would have developed: (a) a cadre of trained professionals and strengthened institutions equipped to execute nutrition programs on a national scale; (b) an assessment of the effectiveness of various direct nutrition action programs; (c) programs for more efficient techniques of food storage and processing, and for fortification of certain foods; (d) techniques for community education in nutrition; (e) nutritional considerations in its agricultural programs; and (f) a comprehensive national food and nutrition program.

(ix) In addition to the above benefits which are national in scope, other immediate side benefits can be expected in the areas where direct pilot nutrition action programs will have been carried out. Approximately 30,000 children affected by PCM would have been rehabilitated; about 110,000 families and 45,000 pregnant and/or lactating women would receive nutrition education; 17,000 pregnant and/or lactating women would receive food supplements; and 100,000 children would have been immunized from infectious diseases. Some 18,000 farm families would participate in the home/village garden programs and would improve their nutritional status through on-farm consumption. The introduction of improved, low cost on-farm/village level storage facilities would mark the beginning of a nationwide program to reduce food losses and thereby to raise food availability. Since the proposed project is in a pioneering field for Indonesia, it carries an inherent risk. A risk specific to this project arises from the fact that its implementation involves many ministries and their coordinated actions. Organizational arrangements included in the project are considered satisfactory to minimize this risk.

(x) Each of the components of the proposed project would be implemented within the existing organizational structure of the Government. The overall coordination of the project would rest with the Director General of Community Health in the Ministry of Health, who is the designated Project Director. To ensure the full cooperation of the Ministries of Home Affairs, Education and Agriculture, a part-time co-director within each of these ministries, would work in close cooperation with the Project Director in identifying and solving problems of interministerial coordination. The CRDN, in the Ministry of Health, and the FTDC, in the Ministry of Education, would be administered by their respective directors. The NIPP component would be

administered at the national level by a coordinator stationed in the Ministry of Health. In the provinces, the Governor of the Province would be responsible for coordination and implementation of NIPP. The Anemia Prevention and Control Project would be administered by the National Institute for Industrial Hygiene and Occupational Health, through delegation to its regional institutes, in close collaboration with the Directorate General of Plantations of the Ministry of Agriculture and the NIPP Coordinator. Provision has also been made for about 35 man-years of consultant specialists, for periods varying from few weeks to four years, who would compensate for the current scarcity of Indonesian personnel with training and experience necessary to support the project. About 44 Indonesians would be provided with fellowships for training in nutrition and food technology, either abroad or in Indonesia.

(xi) Total costs of the proposed four-year project are estimated at US\$26 million (Rp 10.8 billion, including contingencies). The foreign exchange component is about 40 percent. Out of the total base costs of US\$18.8 million, US\$8.9 million are capital costs, US\$3.0 million are for technical assistance, US\$5.5 million are incremental operating costs, US\$0.7 million are for agricultural activities and US\$0.6 million are for evaluation. Civil works contracts in excess of US\$1.0 million would be awarded on the basis of international competitive bidding in accordance with the Bank's guidelines; domestic contractors would be given a 7 1/2 percent preference. Contracts below US\$1.0 million would be awarded on the basis of competitive bidding advertised locally, with no restriction on bidding by foreign firms, and in accordance with normal government procedures which are satisfactory to the Bank. Equipment and furniture contracts in excess of US\$50,000 would be awarded on the basis of international competitive bidding in accordance with the Bank's guidelines; domestic manufacturers would be allowed a preferential margin of 15 percent or the existing customs duty, whichever is the lower, over the c.i.f. price of competing imports. Contracts for equipment and furniture which cannot reasonably be grouped in packages of at least US\$50,000 equivalent could be awarded on the basis of competitive bidding advertised locally following normal government procedures which are satisfactory to the Bank. Procurement of vehicles (except for 10 required for start-up) would be on the basis of international competitive bidding subject to Bank guidelines.

(xii) Disbursement would be made at the rate of 100 percent against expenditures for foreign and local consultants, fellowships, project staff in the Office of the Project Director, directly imported equipment, library supplies, furniture and vehicles; 95 percent of the ex-factory price of equipment manufactured locally; 80 percent of civil works expenditures; 65 percent of imported equipment procured locally; and 40 percent of vehicles procured locally. Expenditures for consultant architects incurred after October 1975 would be financed retroactively from the proposed loan up to a total of US\$50,000 equivalent.

(xiii) The proposed project is suitable for a Bank loan of US\$13 million equivalent to the Government of Indonesia for a term of 20 years, including a grace period of 4 1/2 years.



## INDONESIA

### NUTRITION DEVELOPMENT PROJECT

#### I. INTRODUCTION

1.01 The Government of Indonesia is increasingly concerned about the prevalence of malnutrition among its population. Recognizing that the primary cause of malnutrition is inadequate availability of food, the Government has undertaken major programs to increase the production and availability of staple foods. It has also undertaken important supplementary programs to remedy specific nutritional deficiencies and to upgrade health, feeding and nutrition practices among the most nutritionally vulnerable. <sup>1/</sup> These limited nutrition programs, however, have lacked the organized, systematic and sustained approach needed to combat effectively malnutrition, its causes and its derivative ills on a national scale.

1.02 The Government has requested Bank assistance in:

- (i) developing the institutional infrastructure and the personnel necessary for effective formulation, execution and evaluation of a comprehensive national food and nutrition program;
- (ii) strengthening on-going programs of nutrition research; and
- (iii) improving food technology, nutrition education and training.

In order that the national food and nutrition program will have the greatest impact on nutritional status, a range of pilot action projects will be required to test organizational arrangements, program costs and benefits, and the feasibility of replicability on a national scale.

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<sup>1/</sup> The most nutritionally vulnerable include young children, pregnant women and lactating mothers.

1.03 The project is based upon a study prepared by an Indonesian task force consisting of representatives of relevant ministries, established in 1973 by the BAPPENAS (The National Development and Planning Agency), with assistance from Bank staff, UNICEF, WHO, FAO and consultants. Project appraisal commenced with missions in August/September 1975 and in February 1976. In accordance with the special procedures established during discussion of the Policy Guidelines for Bank Nutrition Activities, 1/ a preliminary report on this project was discussed by the Executive Directors on March 23, 1976. In the light of the Board discussion, further work was carried out by a post-appraisal mission which visited Indonesia in June 1976. The proposed project embodies changes which provide for pilot action operations, closer ties to agricultural research, extension, and credit activities and to the Government's nutrition action program. This project would be the first Bank loan to Indonesia in the field of nutrition, but substantial linkages are envisioned between this and other ongoing Bank projects (see paras. 3.05 to 3.08).

## II. BACKGROUND

### A. Nutrition and Economic Development

2.01 While often a consequence of economic development in many countries, adequate nutrition is a precursor and pre-condition of better productivity and development. Indonesia's 1973 per capita GDP is estimated at US\$184. Although real per capita incomes have improved significantly in recent years, it is estimated that some two-thirds of the population have inadequate daily calorie and protein intake. Nutritional deficiency of such a large part of Indonesia's population is not only a problem of human concern but also of economic development. Well-directed nutrition policies and investments can lower mortality and morbidity rates, contribute to increases in productivity, help achieve family planning and education objectives, serve as a direct means of income distribution and, in general, improve the social and economic conditions of disadvantaged portions of the population.

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1/ Document R73-247, October 21, 1973.

2.02 The relationship between better nutrition and improved output has been demonstrated in a number of studies. In Indonesia, studies have shown, for instance, that non-anemic workers have a 20 percent higher productivity than that of anemic workers. <sup>1/</sup> Well organized feeding programs for industrial workers in many parts of the world have demonstrated reduced rates of accidents, absenteeism and labor turnover, resulting in improved skills and greater productive capacity and output.

2.03 Improvement in nutrition also increases the efficiency of other forms of investment in human capital. There is a positive correlation between nutritional status in early childhood and brain development, since 80 percent of eventual brain weight is reached during the first 24 months of life. Malnutrition interferes with a child's ability to concentrate and to learn. School performance of malnourished children is marked by chronic absenteeism, high drop-out rates and high rates of grade repetition. Investments in nutrition thus assist in better utilization of the education system. Even if there is no guarantee of adequate nutrition in adulthood, better nutrition in childhood or in utero enables the child to reach a higher level of mental and physical development and so better adapt to the challenges of adulthood.

2.04 Sound nutrition policies can optimize the use of available food resources. Reducing food and nutrient losses through better storage, processing and dietary combinations of foodstuffs increases the effective availability of food at given production levels. Effective interaction of nutrition policies with agricultural and economic policy actions is therefore essential.

2.05 The relevance of nutrition to development in Indonesia has to be seen in the broad context of the country's development strategy. To establish an explicit relationship between improved nutritional status of the population and employment and income generation is difficult. Indonesia's development program, supported in many instances by multi and bilateral aid programs, does address directly the problems of employment and income generation. Nutrition activities should be seen as complementary to these efforts. Adequate nutrition improves the quality of human capital both immediately and over the longer-run by increasing

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<sup>1/</sup> "Nutrition and Health of Indonesian Construction Workers: Endurance and Anemia", D. Karyadi and S. Basta, IBRD Staff Working Paper 152 (1973); "Iron Deficiency and the Productivity of Adult Males in Indonesia," S. Basta and A. Churchill, IBRD Staff Working Paper 175 (1974).

production capacity of the current work force as well as the educability and potential productivity of children. Besides promoting more effective use of investments to develop agriculture, health and education, nutrition programs can effect some income redistribution, particularly in rural areas, and help reduce poverty.

## B. The Nutrition Problem

2.06 The Government, in collaboration with various international agencies, has identified four major nutrition problems in Indonesia: (i) protein-calorie malnutrition, (ii) vitamin A deficiency, (iii) iodine deficiency, and (iv) nutritional anemia. These problems are wide-spread throughout Indonesia, although regional, ecological and cultural differences, that affect food availability and consumption account for geographical variations in the nature and intensity of malnutrition (see Annex 1).

### Protein-Calorie Malnutrition (PCM)

2.07 Inadequate intake of calories and protein is the most basic nutrition problem in Indonesia. Close to one-third of all children under the age of five (about 7 million) are estimated to suffer from moderate to severe PCM. In 1974, a WHO-sponsored team determined from existing surveys that PCM among Indonesian children below the age of two was particularly severe: over 50 percent of these children in Java were found to suffer from second and third degree malnutrition (i.e. body-weights less than 75 percent and 60 percent respectively of the WHO norm). Pregnant women are another highly vulnerable group, although insufficient study has been done to allow for a reliable estimate of the incidence of PCM among this group. More than half of all lactating mothers (about 5.6 million) are affected by moderate PCM.

2.08 PCM is a major cause of Indonesia's high rate of infant mortality, either directly or by lowering infants' resistance to infectious disease. Infant deaths in Indonesia lie between 110 and 150 per 1,000, compared to infant mortality rates (per thousand live births) of 18 in North America, 139 in India, 142 in Pakistan and 38 in neighboring Malaysia, which has considerable geographic and cultural similarities with Indonesia. If PCM is untreated among survivors, particularly before the age of two years, it retards physical growth and impairs mental development. After the age of three years, the recovery of lost growth caused by PCM is extremely difficult if not impossible.

### Vitamin A Deficiency

2.09 The incidence of vitamin A deficiency among Indonesia's population, particularly among children, is one of the highest in the world. This deficiency affects growth and weakens resistance to other nutritional diseases. Prolonged vitamin A deficiency causes serious lesions of the eye, clinically known as xerophthalmia, which compete with trachoma as a leading cause of blindness in the country. The incidence of xerophthalmia among children has been found to be 4-5 percent in rural Java, reaching up to 22 percent in urban squatter areas.

### Iodine Deficiency

2.10 Goiter, caused by iodine deficiency, has been prevalent in Indonesia for centuries. In its early stages, endemic goiter may display no symptoms, but untreated goiter causes difficulty in breathing, coughing and voice changes. Recent studies show increasing incidence of goiter, 1/ especially among children. (Between 50 to 80 percent of those surveyed in North and West Sumatra, East Java and Bali were found to have goiter). Iodine deficiency can lead to cretinism, a more serious iodine deficiency disease, which manifests itself through a wide range of symptoms: mental retardation, impaired physical development (dwarfism), deafness, deaf-mutism and neurological abnormalities. A 1973 study indicates there are about 100,000 cases of cretinism, and about 500,000 mild cases of cretinism in Indonesia.

### Nutritional Anemia

2.11 Indonesia has the highest country incidence of nutritional anemia ever recorded in a male population during non-famine conditions. In a joint research project undertaken in 1973 and 1974 by the Indonesian Nutrition Research Institute and the Bank 2/, the prevalence of anemia among a sample population of Indonesian male workers was found to be between 28 to 52 percent. The variations reflect the incidence of anemia in different geographical regions. More than three-quarters of the anemic workers suffered from iron deficiency. Anemia was also found to be prevalent among non-pregnant women (35 to 85 percent) and among pregnant women (50 to 92 percent, mostly

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1/ Nain, D.A. et al, "The Prevalence of Endemic Goiter among School Children in Some Parts of Sumatra, Java and Bali, Indonesia" Second Asian Nutrition Congress, Manila, 1973.

2/ D. Karyadi and S. Basta, "Nutrition and Health of Indonesia Construction Workers," IBRD Staff Working Paper 152 (1973), and S. Basta and A. Churchill, "Iron Deficiency and the Productivity of Adult Males in Indonesia," IBRD Staff Working Paper 175 (1974).

due to iron deficiency). 1/ The results of the research projects corroborate the findings of other field surveys indicating anemia as a major health problem. Nutritional anemia leads to lower productivity, lassitude and poor work habits, which in turn lead to lower incomes and poor nutrition. The 1974 study found that productivity of non-anemic workers was about 20% higher than that of anemic workers.

### C. Causes of Malnutrition

2.12 Malnutrition in Indonesia is a result of a combination of factors, mainly inadequate production and availability of food, inequitable distribution of available food and insufficient awareness of the nutritional needs of and by vulnerable groups. Poor food habits compound the problem. Concurrent parasite infestations and infections adversely affect intake through reduction in appetite and absorption of needed nutrients. Indonesia's average per capita availability of food is about 1880 calories and 43 grams of protein compared to a recommended daily requirement of about 1920 calories and 40 grams of protein. 2/ However, these averages do not convey the seriousness of the overall problem. Uneven distribution of income and unequal access to food in Indonesia cause a substantial percentage of the population to be in a state of chronic under-nutrition. While general economic development strategies are required to correct income inadequacies, nutrition activities can increase effective food availability and utilization especially for the nutritionally vulnerable.

#### Food Production

2.13 Indonesia's First Five Year Development Plan period (1969-74) concentrated on increasing production of rice, the main staple food, through improvement and development of irrigation facilities, appropriate pricing policies, expanded and improved supply and distribution of fertilizer and other inputs, provision of farm credit and extension services. Rice production expanded at the rate of 4.7 percent per year. The production of

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1/ Soekirman, "Priorities in Dealing with Nutrition Problems in Indonesia," Cornell International Nutrition Monograph Series (1974).

2/ The recommended daily requirements are based on FAO/WHO Committee Recommendations for Energy and Protein Requirements for the Southeast Asia Region, Short-term targets (1973).

secondary crops, however, declined during this period. 1/ Based on calorie content, the production of all food crops rose by only 3 percent per year and did not keep pace with increased demand for food crops resulting from higher incomes and population growth. 2/

2.14 For the Second Five Year Development Plan period (1974-1979), growth in rice production has been projected at 5 percent per annum. Also, the Government plans to intensify secondary food crop production.

2.15 Preliminary indications suggest food wastages of up to 25 percent due to storage and distribution losses and nutrient losses in processing. The Government recognizes the need for an action program to improve food processing, storage and marketing in order to make maximum use of agricultural output.

#### Food Habits

2.16 Poor food habits and lack of awareness of nutritional requirements among a large segment of the population adversely affect nutritional status, particularly among the nutritionally vulnerable (for details see Annex 1). In most areas, the preferred staple is rice, frequently mixed with maize, cassava or sweet potatoes, for one of the two meals per day. Very few families can afford to consume animal protein. Protein rich vegetables are seasonal and are used only infrequently in meals. Locally processed soybean products are popular, but are not available in sufficient quantities to provide adequate levels of protein or calories.

2.17 Fortunately, breast-feeding of children, normally until the first and often until the second year, is almost universally practised in rural areas. But there is little understanding of the importance of additional solid foods other than soft rice or bananas for children after 5-6 months. Vegetables, meat and fish are generally not provided to young children in any form, due in part to local practices and beliefs that such foods may be harmful.

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1/ Maize, soybeans, groundnuts, cassava and other tubers. For details on crop production see IBRD Report No. 708-IND, 1975, p. 8.

2/ The population of Indonesia is estimated at 130 million and is increasing at a rate of 2.3 percent per year. Because income levels in Indonesia remains low (GDP was estimated at \$184 per capita in 1973), between 55 and 60 percent of income growth is translated into demand for foodstuffs.

D. Actions to Counter Malnutrition

2.18 The Government is strongly committed to increase production and availability of food. It recognizes that an increase in rice production alone will not be sufficient to control malnutrition and is implementing actions through the BIMAS/INMAS 1/ programs to increase production of diverse food crops. The Bank has recently approved a National Food Crops Extension Project which will intensify and expand the extension service for these programs. However, further actions are required to meet the nutritional needs of specific age and income groups. Although available data reveal the gravity of the nutrition problem and general direction of action, the Government's attempts to promote an intensified attack on the nutritional problem are handicapped by insufficient manpower and institutional capacity and by an inadequate data-base from which to analyze the effectiveness of possible nutrition activities.

On-going Programs

2.19 Indonesia's on-going nutrition programs, though limited in scope, supplement agricultural policies and reflect an appreciation of the gravity and multi-sectoral nature of the problem.

The Applied Nutrition Program (ANP)

- (a) The Applied Nutrition Program began in the Province of Central Java in the early 1960s and was supported until 1974 by UNICEF, FAO and WHO. Since 1970, pilot projects have been undertaken in over 100 villages. ANP projects promote the production and consumption of protective 2/ and protein-rich foods (i.e. poultry, milk and fish) through nutrition education. The Ministry of Health currently supports and administers the program with the participation of the local administration and provincial and regional nutrition committees.

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1/ Mass guidance program for self-sufficiency in rice and palawija (pulses, soybeans and other intercropped varieties). The BIMAS program was initiated in 1965/66 and by 1974/75 covered about 2.2 million ha of rice land. Its key feature is an approach whereby eligible farmers obtain credit for current inputs and for living allowance together with extension service. The INMAS program commenced in 1967/68 to provide subsidized inputs, without credit or extension.

2/ Protective foods are foods rich in vitamins and minerals, such as dark green leafy vegetables, orange or yellow fruits and vegetables.

Vitamin A Distribution

- (b) Assisted by UNICEF, the Ministry of Health, over the last two years, has distributed vitamin A capsules (each containing 200,000 international units) to 200,000 children between the ages of 1 and 4 years, or 1 percent of the age-specific population, as a prophylaxis against xerophthalmia.

Salt Iodization

- (c) Agreement has recently been reached between the Government and UNICEF on a program to fortify 120,000 tons of salt per year with potassium iodate in large state salt works as protection against goiter. The possibility for iodating people's salts, i.e., salt produced by traditional methods in small saltpans by cooperatives and other producers is also under active investigation.

Lipiodol

- (d) In areas where endemic cretinism is a serious problem, injections of lipiodol, an iodine compound dissolved in oil, are being carried out. This is expected to protect injected persons for five years. The target of this program, which began in 1975, is to cover 300,000 people per year.

Distribution of Milk Powder

- (e) Milk powder has been provided to about 2,000 Maternal and Child Health (MCH) Centers with the assistance of the World Food Program (WFP) since the early sixties.

School Feeding Programs

- (f) In West Java, CARE has organized a school feeding program that now covers approximately 300,000 children. Catholic Relief Services and the Church World Service support feeding programs for a further 50,000 school children in Central Java.

2.20 These programs have been on a relatively small scale, diffuse in character and content, and have lacked baseline nutritional data on which to analyze their effectiveness. More importantly, adequate attention has not been given to problems of inter-ministerial/inter-sectoral coordination at the national and local levels. The ANP program, while successful in increasing the awareness of nutritional problems in project areas, had few identifiable benefits commensurate with the outlay. A 1973 evaluation of the program indicated that the program placed too great an emphasis on increasing protein intake, particularly of animal origin, which is not an economically feasible solution for the majority of the population. The program also aimed at blanket coverage of the population within small pilot areas rather than being directed at those most in need. School feeding programs have relied on imported foods and donations, but are now being scaled down, due to the reduction in available grant supply. No action program has been developed to combat the widespread anemia. The effect of the distribution of milk powder has been hampered by low and irregular attendance at MCH centers and administrative problems. Less than two-thirds of the milk powder supplied has been delivered to those attending the clinics, who are mainly the better off and the better educated. The cost of vitamin A distribution in capsule form has been high and can be regarded only as a temporary expedient. Food wastage in store and processing is another serious problem which has not yet been tackled adequately. In its plans to reduce food losses, the Government is hampered by inadequate institutional capacity. However, despite their various shortcomings, these initiatives have contributed to an increase in general awareness regarding nutrition problems in government circles and this review of their respective implementation experiences has contributed valuable information to the formulation of this project.

E. Existing Institutional and Organizational Structures for Nutrition Activities

2.21 The Indonesian Nutrition Research Institute was established at Bogor in 1960 under the administration of the Ministry of Health. In 1975, its functions were broadened and it was converted into the Center for Research and Development in Nutrition. The research undertaken at the Institute has been essentially bio-medical in orientation. The present work program is of good quality but is limited by shortages of staff, funds and equipment.

2.22 The Academy of Nutrition at Jakarta offers three years of training and awards Bachelor of Science degrees in nutrition to about twenty-five graduates a year. In 1973, there were 417 trained nutritionists in Indonesia 1/ -- less than half the number required to implement the presently proposed Government programs. The Government plans to post nutritionists to 26 provinces and to each of the 260 Kabupatens, 2/ in addition

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1/ 352 are Bachelor of Science in Nutrition, 36 are Masters of Science, one has a Doctorate in Nutrition and 28 are physicians.

2/ Kabupatens are administrative sub-divisions of provinces.

to providing dieticians for the large hospitals. At a higher level, nutrition staff are required for medical schools and universities. The shortage of adequately trained nutritionists is a major constraint on the level and scope of nutrition activities.

2.23 The Ministry of Health has been primarily responsible for all nutrition activities in Indonesia. Following a 1974 national nutrition conference, a Presidential Instruction (INPRES) was issued on September 3, 1974, establishing a Ministerial Committee responsible for coordination and implementation of an overall national nutrition program. The Committee is chaired by the Minister of State for People's Welfare, and consists of the Ministers of Finance, Planning, Industry, Interior, Agriculture, Education, Religion, Information and Health. The Minister of Interior has instructed the Governors of Provinces and Bupati (chief executives) of Kabupatens of their responsibility for coordinating the existing nutrition programs, as well as the proposed nutrition intervention program, within their respective areas of jurisdiction. Subsequently, the nutrition committees established at provincial and Kabupaten levels under the ANP have been strengthened in order that they can provide advice on the coordination and implementation of all nutrition activities. In provinces where ANP is not operating, similar committees are being established.

2.24 The Ministerial Committee is advised by a Technical Commission, chaired by the Deputy Chairman of BAPPENAS, in charge of social welfare, people's housing and health. Membership consists of working level representatives from the various ministries. The Technical Commission has appointed sub-committees to make recommendations on policies regarding goiter, vitamin A prophylaxis, a revised ANP program, nutrition education and breast-feeding. In BAPPENAS, a nutrition planner has been placed in the Bureau of Social Welfare, People's Housing and Health.

### III. THE PROJECT

#### A. Goals and Strategy

3.01 The purpose of the proposed project is threefold. First, it will strengthen and expand the existing nucleus of personnel and institutions in Indonesia, to bring about more effective capacity for: formulation and execution of nutrition programs; operational research; manpower training in nutrition, and project monitoring and evaluation. Second, through field level action programs and their evaluation, nationally replicable and cost-effective measures will be developed to improve the nutritional status of malnourished target groups. Third, the combination of the above actions will aid the Government in the formulation and execution of a more comprehensive food and nutrition program on a national scale. On a national scale, the objectives would be to:

- (a) strengthen the institutional and technical capacity for applied research and development of improved food technology at the village level in order to increase the available quantity and quality of food;
- (b) provide information to help rationalize food and agricultural policies and programs, leading when appropriate to increased investments in production of nutritious foods;
- (c) seek to bring about changes in food usage in order to optimize the use of food resources so that nutritional status can be improved and sustained without outside assistance;
- (d) interact with ongoing agricultural research programs to develop nutritionally efficient crop varieties;
- (e) provide a monitoring, evaluation and planning system to assess and, if necessary, modify project action components in the light of implementation experience; and
- (f) assist in the formulation of a national food and nutrition program and develop the managerial base for its execution.

3.02 At the field level, the objective would be to evaluate the nutritional impact, social acceptability, administrative feasibility, cost-effectiveness and national replicability of various combinations of nutritional activities, in sufficiently large but diverse areas including rural township. These activities would be directed at pregnant women, lactating mothers, children under the age of three years and anemic plantation labor, located mainly in low-income communities. The package of nutrition measures under the various pilot projects would emphasize: use of local food resources; production of nutritious food in home gardens primarily for own consumption; integrating existing knowledge with adaptations resulting from nutrition research; education and manpower training; and better methods of village food processing, preparation, storage and distribution.

#### B. Project Description

3.03 The proposed nutrition development project would assist the Government in:

(a) Institution Building

- (i) strengthen the Center for Research and Development in Nutrition (CRDN), under the Ministry of Health, through funds for additional staff, training, technical assistance, necessary equipment and modest expansion of physical facilities;
- (ii) support the establishment of the Food Technology Development Center (FTDC), under the Ministry of Education, at the Agricultural University, with physical facilities, equipment, training, technical assistance and additional staff;
- (iii) improve planning, coordination and evaluation of nutrition activities through provision of technical assistance to the Ministries of Health, Education and Agriculture;

(b) Direct Nutrition Action Programs

- (i) initiate a Nutrition Intervention Pilot Project (NIPP) - administered by the Ministry of Health - through funds for additional staff, training, technical assistance, buildings, equipment and materials to provide integrated nutritional, educational, agricultural and health activities and selective food supplementation to vulnerable target groups in 180 villages of seven Kabupatens with a population of about 740,000;
- (ii) increase the production of nutritious vegetables and fruits in 18,000 home/village gardens through provision of improved seeds, development of model garden packages and intensification of agricultural extension efforts;
- (iii) improve food storage, especially at the village level, through assistance to the Food Technology Development Center which would, in collaboration with the Ministry of Agriculture, develop an appropriate small-scale storage program for a total capacity of 300 tons for which financing would be provided;
- (iv) initiate an iron supplementation program, administered under the National Institute for Industrial Hygiene and Occupational Health, through funds for iron pills, iron fortified salt, medication and materials to tackle nutritional anemia among 3,000 families in a selected number of plantations with a view to developing a national program to cover all government and privately owned plantations;

(c) Education and Training

- (i) initiate and test the efficiency of alternative nutrition communication methods affecting 110,000 beneficiaries to bring about desirable changes in nutrition behavior through funds for equipment, technical assistance and incremental operating costs;
- (ii) upgrade and expand the training of nutritionists in the Academy of Nutrition at Jakarta, under the Ministry of Health, by provision of equipment, staff, training, technical assistance and necessary physical facilities;
- (iii) improve the training of agricultural extensionists by introduction of nutrition in the curriculum of the basic training centers and of the secondary agricultural schools of the Agency for Education, Training and Extension through funds for curriculum development, equipment and instructors; and

(d) Assistance for Formulation of a National Food and Nutrition Program

assist the Government in the preparation of a national food and nutrition program by taking into account inter alia: the results of the evaluation of the various nutrition actions taken up under the proposed project and their cost effectiveness and replicability; manpower availability; and the managerial skills and institutions developed as a result of the project.

C. Linkages of the Proposed Nutrition Project with Ongoing Projects Assisted by the Bank

3.04 In addition to the general linkages between Indonesia's national development program and nutrition (discussed in paras. 2.01 to 2.05), the proposed project would establish specific ties with ongoing activities assisted by the Bank. Most of these are agricultural projects 1/ which are aimed at quantitative increases in production. The proposed nutrition development project would complement these efforts by increasing the efficiency of processing and storage and improving the quality of foods consumed by the poorer sections of the population.

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1/ Bank Group operations in Indonesia include 22 projects in the agricultural sector. The total of loans and credits approved amounts to US\$528 million. These include: agricultural research and extension (2), agricultural commodity estates (5), irrigation rehabilitation (8), fertilizer (3), fisheries (2), beef cattle (1) and seeds (1).

3.05 The Government, through its National Food Crops Extension Project (Bank Loan 1267-IND; implementation period 1977-1982), expects to increase the number of field extension agents, provide them with adequate training, improve the rural extension infrastructure and introduce sound extension methodologies with emphasis on continuous training and regular farm visits. While this extension project provides training solely for production support, it also provides opportunities for future linkages with the nutrition development project for educating extension workers at the Rural Extension Centers in nutrition, horticulture and simple food-handling techniques. They could then impart these methods to small farmers in an effort to encourage the optimal production, storage and processing of foods, keeping in mind regional and national nutrition requirements.

3.06 The Government's Agricultural Research and Extension Project (Bank Loan 1179-IND; implementation period 1976 - 81), supports production-oriented research for rice, "palawija" crops (maize, soybeans, sorghum and cassava), highland vegetables and rubber, and assists in establishing national and regional information centers to prepare materials needed for extension of research findings to small farmers. The centers for research supported by the nutrition development project would coordinate closely with agricultural research centers to help set research priorities, and to increase the production of more nutritious varieties of cereals, legumes and vegetables and to improve methods of food storage and processing (see paras. 3.11 and 3.12). The nutrition development project would provide for inclusion of nutrition and horticulture into the curricula of the agricultural high schools and the agricultural training and extension centers administered by the Agency for Education, Training and Extension (AETE).

3.07 Indonesia has an active population program assisted by IDA Credit 300. Field staff of the proposed nutrition development project would evaluate the relationship, disclosed in some studies, between improved nutritional status and reduced infant mortality on the one hand, and reduced desired family size and better acceptance of family planning on the other.

3.08 Nutrition development would also be linked with other government initiatives e.g., the Transmigration Project (Bank Loan 1318), the Second Urban Development Project (Bank Loan 1336), and the proposed sugar project, which would offer possibilities for fortification of sugar with micro-nutrients.

#### D. Detailed Features

##### The Center for Research and Development in Nutrition (US\$5.9 million)

3.09 The operations of the Center for Research and Development in Nutrition (CRDN), which is led by capable professionals, are presently constrained by inadequate physical facilities and shortage of staff. The project component would strengthen the CRDN to broaden the scope of its activities so that it can undertake the nutritional and related operational research needed with a view to assisting the Government to formulate

and execute a national food and nutrition program (see Annex 2). The component includes construction of additional laboratories, enlarging present facilities (including the auditorium, library and staff housing), provision of necessary equipment and assistance in research and development program formulation. In addition, it would provide funds for recruitment and training of additional staff (to expand the professional staff from the present 12 to a total of 44), for consultants and for fellowships.

3.10 The Center will work closely with the Food Technology and Development Center (FTDC), the Agency for (Agriculture) Research Development (ARD) and the Agency for (Agricultural) Education, Training and Extension (AETE). The latter two are supported under other Bank-assisted projects. In particular, work emphasis would be on planning, monitoring and evaluation of direct nutrition intervention programs such as the NIPP field activities proposed under this project (see para. 3.15). The work program of the Center, detailed in Annex 2, would be handled by four divisions in the areas of food sciences, biochemical nutrition, community nutrition and socio-economics. In addition to its main research function, the Center would serve as an important training institute, providing facilities for practical laboratory and field work and for training faculty for the Nutrition Academy at Jakarta. A unit to coordinate these training activities would be established in CRDN.

Food Technology Development Center (US\$5.5 Million)

3.11 The component provides for the construction of buildings, (including laboratories, library and pilot plant facilities), laboratory equipment, staff development, consultants and fellowships for the Food Technology Center (FTDC). This Center is being established within the Agricultural University of Bogor, to improve the level of applied technology, particularly with respect to village level processing and storage. It would be used for research and training in food technology and would develop a pilot extension service to identify problems in rural food processing and storage and to provide information to rural communities, especially but not exclusively in NIPP areas. It would also carry out work related to the food processing industry. The FTDC would work in close coordination with the CRDN, the Agency for (Agricultural) Research and Development (ARD), the Directorate-General of Food Crops and the Agency for (Agricultural) Education, Training and Extension (AETE) (see para 5.06).

3.12 The emphasis of FTDC's work program, which the Appraisal Mission reviewed and found satisfactory, will be on:

- (a) Assessing traditional processing and storage technology to form the basis for developing and testing more efficient methods for reducing wastage in storage and processing and thereby increasing the availability of food products. Evaluation for technical and cost effectiveness would precede the development of a national storage program (see para. 3.25-3.26).
- (b) Developing efficient rice drying methods to prevent deterioration during storage and packing methods to minimize transport and storage losses.

- (c) Improving food processing with a view to increase the nutritive value and yield of processed products. (For example, it would explore rice parboiling, presently not practiced in Indonesia. Parboiling would reduce the vitamin losses which occur when rice is polished, improve its value as a source of protein both in quantity and quality and enhance its storage ability.)
- (d) Assessing opportunities for food fortification; preservation of perishable crops; increasing the nutritional value of processed foods; utilization of waste products such as rice bran; the processing of foods for urban markets and for export; and methods of quality control.

3.13 To ensure that FTDC's work is operationally oriented, experimental designs would be tested first in simple food storage and processing units adjacent to FTDC which simulate village conditions. Thereafter, satisfactory prototypes would be tested in rural areas. FTDC's activities will be closely coordinated with the agricultural research programs supported through the Agricultural Research and Extension Project. In addition, FTDC would establish a ten-man extension unit which would:

- (a) act as a link between the FTDC and selected villages;
- (b) transmit information about existing storage and processing practices to FTDC;
- (c) introduce new methods to the selected villages;
- (d) help train government extension service personnel in these methods; and
- (e) cooperate with the University Extension Center at the Agricultural University, Bogor.

3.14 The Center would train annually up to 25 food technology students of the Agricultural University. In addition, it also would provide short courses for the extension staff of the Department of Agriculture, food industry technicians and nutritionists. The project component also would assist in staff development for the Center through training opportunities locally and abroad to 18 graduate candidates and 28 undergraduate candidates. Additional information concerning this component appears in Annex 3.

#### Direct Nutrition Action Programs

3.15 The Nutrition Intervention Pilot Project (NIPP) (US\$2.6 million). The NIPP component would improve the nutritional status of children under the age of three, pregnant women and lactating mothers in about 180 villages distributed in 7 Kabupatens (see Annex 4 for details). The component would finance: the immunization of 100,000 children against infectious diseases; supplementary feeding of 30,000 potentially severe and moderately malnourished children under the age of 3 and of 17,000 pregnant and lactating women; the

nutrition education of about 100,000 families; supply of iodized salt, vitamin A and iron supplements to the target population at risk; salaries of staff to train village volunteers (village cadres) and supervise them; evaluation of the effectiveness of the combined package of these measures and technical assistance to plan and implement these activities. The villages included in this component would also benefit from home/village garden programs and improvements of storage and processing (see Annex 4, paras. 27 to 40). The pilot action component would take place initially in two Kabupatens in Bonjonegoro, typical of conditions prevailing on East Java, and in West Lombok in Nusa Tenggara Barat, which represents the less densely populated areas. Two additional Kabupatens would be added in the second year. After a mid-project review by the Bank and the Government, an additional 3 Kabupatens would be included, making in all a total of 7 Kabupatens 1/ by the fourth year.

3.16 The proposed NIPP activities would draw on Indonesia's experience with the Applied Nutrition Program (ANP) and the results of the 1974 evaluation of ANP (see Annex 4). Nutrition committees originally established for ANP at provincial headquarters and Kabupaten levels would now review and advise NIPP. New committees would be created at the sub-district level (Kecamatan) as part of the project.

3.17 In each NIPP village, about 1 volunteer per 50 households would be chosen from among primarily female extension workers, teachers and social workers to: (a) identify moderate and severe PCM cases among children and pregnant and lactating women; (b) provide simple means of nutrition education; (c) ensure efficient delivery of food supplements; and (d) check monthly the weight of children. BUTSI 2/ volunteers under the supervision of the Bupati would supervise these cadres. Both the Butsi volunteers and the cadres would be trained by Assistant Nutrition Program Officers (see Annex 4, para. 53 to 57). Those with unsatisfactory gains indicating existing and potential PCM cases then receive free food supplements based as far as feasible on food produced in the NIPP area. The malnourished pregnant and lactating mothers eligible for food supplementation would be selected on the basis of agreed criteria, chief among which would be low family income levels. While in the initial stages there is no cost recovery, the Government anticipates that ultimately, after sufficient project experience, the better-off villages will share in the cost of NIPP. Details will be worked out during the proposed NIPP review which is part of the project. Nutrition education emphasizing the importance of adequate child feeding would accompany the food supplementation, since in the long-run the teaching of better feeding is far more important than the curative aspect of supplementary feeding programs. Nutrition education will be based on currently accepted packages. These packages will be refined based on the tests carried out under the component dealing with nutrition communication and behavioral change (para. 3.29). MCH personnel of the provincial health system would visit the villages periodically to give immunizations and these costs would be supported by the project.

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1/ Subsequently Kabupatens will be selected for the project, one in each of the provinces of Central Java, South Sumatra, West Java, Yogyakarta and Bali.

2/ BUTSI is a voluntary agency using Indonesian graduates to work in rural settings on approved projects.

3.18 In the experimental stage, the annual costs of the NIPP program averages US\$3,400 per village or about US\$1 per capita. In addition to food supplementation, immunization, regular salaries and overhead, these costs include special evaluation and project management. Because of the pilot nature and the relative small population coverage, the per capita costs are higher than when the project becomes a national program. It is also expected that the number of PCM children given food supplementation would be relatively smaller after the initial phase of the program. It is, therefore, anticipated that when NIPP becomes a national program, the costs of selective food supplementation and immunization in a typical village (population 3,000) would be around US\$700 annually, or US\$0.23 per capita. The Government expects that local communities would ultimately share in the costs of food supplementation (see Annex 4, para. 24).

3.19 Baseline data would be collected in the NIPP areas under the technical supervision of CRDN. CRDN would be responsible for surveying nutritional status and evaluating the results of nutritional and other activities on both a midterm and final basis. These evaluations, which would take into account both the nutritional and cost effectiveness of the various nutrition interventions, would help to determine feasible replicability and thus provide the basis for their expansion into a comprehensive national food and nutrition program.

3.20 Detailed plan of operations are presently being prepared for the first two NIPP Kabupatens, indicating the villages to be selected and the planning of various activities particularly including: arrangements for food procurement; processing and distribution; program for selection and training of village cadres; coordination of health activities; specific location of villages for supportive water supply programs; and agricultural extension work related to establishment of village-home gardens, storage and processing. (The timing of these activities is presented in Annex 4, Appendix 5 and 6). The nutrition program officer of each province would prepare these plans at each Kabupaten headquarter in consultation with the Kabupaten nutrition committees approved by the provincial BAPPEDA (Planning Authority) and the national coordinator of NIPP. The first year of NIPP operation in each Kabupaten would be devoted to baseline surveys, preparing plans for operations, staff training, field trial of food supplements and procurement of equipment.

3.21 At the national level, NIPP would be managed by a coordinator in the Ministry of Health; assisted by a provincial nutrition program officer and two assistant nutrition program officers (ANPO) at Kabupaten level. The coordination of the different activities involved at Kabupaten level necessitates the ANPO working under the administrative control of the Bupati, the executive head of the Kabupaten.

3.22 Assurances were obtained from the Government that:

- (a) The plan of operations for the initial two NIPP Kabupatens would be submitted to the Bank for review prior to implementation and not later than August 1, 1977.

- (b) The selection of new Kabupatens would be made in consultation with the Bank, according to criteria agreed with the Bank (see Annex 4 para. 7). The third and fourth Kabupaten would be selected not later than October 1, 1977. The remaining three Kabupatens would be selected not later than August 1, 1978.
- (c) A review of the NIPP would be conducted at the end of the second year of project operation with a view to determining program effectiveness and any necessary changes of program direction and content.

3.23 Action Program for Home/Village Gardens (US\$0.5 million): Increasing the production and availability of nutritious vegetables and fruits through improvement of home-gardens has been a part of the Applied Nutrition Program. Such a program would be an important aspect of the NIPP plan of operations, and would be implemented through the existing agricultural extension service. The lack of improved vegetable seeds and agricultural extension staff trained in horticulture constitutes a severe constraint to production. This component would provide salaries for 10 agricultural extension staff, seeds, fertilizer and other production oriented services. The annual costs for this program per farm family are expected to be in the order of US\$4.5. In order to establish the necessary demonstration effect the program would be provided for a 3 year period on a grant basis. Prior to project completion, the Government and the Bank would review the results and in light of the findings determine whether this subcomponent should be prepared for more general replication (i.e. a credit program to be administered under BIMAS.) <sup>1/</sup> Assurances to this effect were obtained. A total of 18,000 individual farmers in the NIPP villages would receive an initial supply of seeds and other inputs needed for home gardens. Community efforts would be mobilized through the Lurah (Village Chief) and village nutrition cadres in setting up village gardens - for each village - on communally owned land. One extension worker would be available to about 1,800 farm families within his area, but he would focus his efforts on group of 10-15 progressive farmers, headed by a contact farmer. Each progressive farmer in turn would transmit the advice received from the extension worker to a group of 7-10 neighboring farmers. Each extension worker would be assigned to 16 farmer groups, visiting each group once a fortnight on a fixed day and time. He would motivate farmers to rapidly adopt improved methods so that their gardens would serve as models to their neighbors. A part of the output of these gardens would be marketed locally or purchased by NIPP management to be used for food supplementation of the nutritionally vulnerable groups. At the time of full project implementation the additional production of vegetables from these home/village gardens would reach a value of about US\$500,000 annually.

3.24 In addition to tested seed varieties available in Indonesia, the project would provide for imports of vegetable seeds from institutes such as the Asia Vegetable Research and Development Center in Taiwan. These seeds

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<sup>1/</sup> Recently, the Government expended the BIMAS program to commercially marketed vegetables on an experimental basis.

would be tested during the first year of the project at the Agricultural University before being used in the NIPP areas. The University, in cooperation with the Directorate General of Food Crops and the ARD, would also undertake field testing of recently developed model home/ village garden packages, taking into account what is agronomically and economically feasible as well as acceptable to small farmers. The above institutions would also develop:

- (i) a list of vegetables, tree crops, tubers and other plants that can be grown in home/village gardens of the different NIPP areas;
- (ii) methods of laying out demonstration seed gardens which can be replicated in villages; and
- (iii) training curricula and schedules for agricultural extension workers.

Assurances were obtained from the Government that the Directorate General of Food Crops, Ministry of Agriculture, would allocate the 10 necessary additional extension staff to the selected NIPP areas.

Action Program for On-Farm and Village Level Storage (US\$0.2 million):

3.25 The FTDC would, on the basis of a twelve month study, prepare recommendations to improve traditional on-farm and village level storage in the seven NIPP Kabupatens, using local materials as far as possible.

3.26 The project provides financing for the establishment of small-scale storage units in those NIPP villages which have no storage facilities at present. The total capacity of these units would be 300 tons. These units, varying in size from 1 to 10 tons, would be managed by the BUUD (local village cooperative). The storage would be provided to the BUUD on a loan basis in accordance with the existing credit terms under the Food Storage Program. Since this would be the first phase in the application of this program monitoring and evaluation would be needed and undertaken by the FTDC (see para. 3.12 and 3.15).

Anemia Prevention and Control Pilot Project - Plantations (US\$0.2 million):

3.27 Nutritional anemia among plantation workers primarily due to iron deficiency has been demonstrated to be a main factor causing low labor productivity. This component would test the logistical feasibility of establishing a delivery system for iron supplementation with a view to ultimate replication on a national scale (see Annex 5). The project provides financing for:

- (i) the supply of iron pills to cure nutritionally anemic plantation workers;
- (ii) medication and provision of shoes for tackling the problem of hookworm infection;

- (iii) imports of iron fortified salt in the initial stage to be followed by fortification of salt in Indonesia as needed for the project;
- (iv) delivery of iron fortified salt to workers to ensure that an adequate iron level is maintained; and
- (v) monitoring and evaluation.

This component would initiate an integrated program of attack on nutritional anemia on three government owned plantations: two in East Java, each with about 500 workers and one in North Sumatra, with about 1,000 workers, taking full advantage of the plantation's system of medical and health care facilities. The inclusion of 10 small, privately owned plantations in South Sulawesi and West Sumatra, each employing about 100 workers, is planned at a later stage, provided the Directorate General of Manpower Protection and Care of the Ministry of Manpower, Transmigration and Cooperatives can establish a delivery and health system in these localities. It is expected that the ultimate number of beneficiaries would be around 10,000.

3.28 The CRDN would be in charge of baseline surveys and final evaluation. The scientific and technical design of the component would be the responsibility of the CRDN and the National Institute for Industrial Hygiene and Occupational Health (NILHOH) with close cooperation of the Directorate General of Plantations, Ministry of Agriculture and the NIPP Coordinator. The actual field administration would be carried out by the Regional Institute of Industrial Hygiene and Occupational Health (RILHOH). Both national and regional institutes are under the Directorate General of Manpower Protection and Care. The feasibility of the delivery system proposed, namely the plantation administration and/or health clinics would be evaluated. Initially, the iron supplementation would be given on grant basis to the plantations, with average annual cost of less than US\$1 per person. If, as is expected, the increased labor productivity would be significantly greater than the cost of this program, then a general application of the measures would be initiated by government regulations with the individual estates bearing the cost. In case the general application will arise, NILHOH would have to be strengthened in order to initiate, implement and monitor a national program. Provision has been made for such action.

Nutrition Communication and Behavioral Change (US\$1.0 million)

3.29 The 1973 evaluation study of the Applied Nutrition Program found that even in the higher income families who were able to afford enough food, about 40 percent were deficient in both protein and calorie intake. This finding gives an indication of the lack of knowledge about the use of available food. Food habits relating to choice of foods, methods of preparing and cooking foods, distribution of foods within the family, weaning practices and the feeding of a sick child are likely to be responsible for the gap between food availability and consumption. Behavioral constraints are among the critical factors bringing about improvement in nutritional status.

3.30 The general objective of this component (detailed in Annex 6) would be to identify the most critical behavioral constraints and develop measures to bring about desirable changes in nutritional behavior in the selected areas for later replication on a national scale. Among the specific objectives would be:

- (i) to develop the know-how and skills required to overcome behavioral problems and implement remedial measures;
- (ii) to reflect the above in the content of nutritional messages and to select the appropriate media mix to be used and the methods of operation;
- (iii) to train village cadres as the contact personnel, sub-district staff to supervise them and technicians to handle the communications equipment;
- (iv) to identify the contribution of mass media and prepare test material potentially useful for wider application;
- (v) to develop feasible and nationally replicable techniques for nutrition communication.

Workshops, meetings and seminars at various administrative levels would be required. Baseline information with respect to food habits and nutritional status of the population would be used for planning the education program and later for the evaluation of its effectiveness. This work would be carried out by the CRDN. The immediate program would test the behavioral response of people to nutrition communication in one Kabupaten each in Central Java, Yogyakarta and South Sumatra, one of which would be in a NIPP area. These Kabupatens have been selected as Units for Community Development (UDKP) under the Second Development Plan. The three areas have 36 villages with about 110,000 direct beneficiaries.

3.31 The messages would be communicated through village cadres, the utilization of audio-visual equipment and seminars. Nutrition education messages would be pre-tested to ensure that messages are interpreted as intended. Village cadres, mostly women, would engage in interpersonal communication with members of the communities. They would be selected by the village people from among members of voluntary organizations (PKK), i.e. community development workers, paramedical personnel or informal leaders. One cadre would be responsible for 50 households, so that on average each village would have 12 cadres. Three villages would be under one Kabupaten supervisor. He would also be responsible for the initial one month training of cadres and for organizing periodic cadre meetings as a means to feedback information.

Also, the component would provide audio-visual equipment to simulate T.V. and radio broadcasts. Their relative costs and effectiveness would be evaluated. Through feedback from the use of this equipment, "soft ware" of nutrition messages would be developed for subsequent use in the national nutrition plan and for utilizing the mass communications hardware provided through other government projects in education and extension assisted by the Bank. Close liaison with the Office of Education Development, Ministry of Education, would ensure that the nutritional "soft ware" would be incorporated in the overall program for the communication satellite already launched. The component would provide an educational technologist/ communications consultant for one year to advise on the most efficient and effective use of Indonesia's media (the type and quantity of various media to be used, the staff and training required, the production facilities needed and the necessary coordination mechanisms), as well as fellowships both within and outside Indonesia to train specialists in nutrition communication techniques particularly for mass media use.

3.32 The component would be managed by the Chairman of the Center for Manpower Training, Ministry of Health. He would be assisted by a team of four full-time specialists in nutrition, health, communications and administration.

Nutrition Manpower Training (US\$1.5 million)

3.33 Training for Nutritionists: This component would finance two teaching laboratories, a library, an audio-visual room, related facilities and equipment and staff for the Academy of Nutrition (see para. 2.22). This would increase its output of nutritionists from 25 to 60 graduates a year. In addition, financing would be provided for fellowships for training of existing and newly recruited staff. The Academy gives three years of training (beyond 12 years of basic education) in community nutrition and dietetics. Expanding the Academy would help to bridge the anticipated gap of 400 nutritionists. The estimated demand, by 1985 will be 750 nutritionists but the availability with existing facilities would be only around 350. The curriculum of the Academy, which is currently undergoing revision on satisfactory lines, would be continually improved, taking into account the advice of the CRDN and FTDC and the experience of the NIPP and nutrition education components. (In addition, the components relating to CRDN, FTDC, NIPP and Nutrition Education include all training elements for different levels of technical personnel, as part of staff development. Particularly, the training activities contemplated as part of NIPP would cover nearly 2,000 village cadres.)

3.34 Training for Agriculture Extension Staff: To improve the effectiveness of the agriculture extension staff in the field of nutrition, provisions would be made for inclusion of nutrition and home gardens into the curricula of the agricultural high schools and the agricultural training and extension centers. Substantive agreement has been reached with the Agency for Education, Training and Extension (AETE) of the Ministry of Agriculture to develop the detailed curriculum. Agreement has been reached that training of extension workers specializing in home gardens in the NIPP areas will be undertaken through the Rural Extension Center (REC) under the Directorate

General for Food Crops, Ministry of Agriculture. This subcomponent would finance only the incremental cost of the AETE and the REC for curriculum development, equipment and instructors. Annex 7 contains the details of this component.

Assistance for Formulation of a National Food and Nutrition Program  
(US\$0.2 million)

3.35 The experience gained in the implementation and evaluation of all elements of the proposed project would aid the Government in both the formulation and the execution of a comprehensive national food and nutrition program. The planning staff of the Ministries of Health and Agriculture will utilize the preliminary results for drawing up an indicative national nutrition program by mid-1978 for consideration by BAPPENAS. As project operations continue to be evaluated, through the project period, the program would be refined.

3.36 The Project Director, assisted by staff in the monitoring and evaluation unit and consultants provided under technical assistance, would be in charge of program preparation. In this task, he would draw on the contributions of the CRDN (with respect to evaluation of the nutritional effectiveness of various components), the FTDC (with respect to evaluation and formulation of storage and processing activities), and the Food and Nutrition Unit (FNU) in the Ministry of Agriculture (with respect to the nutritional aspects of agricultural policies and projects). The project would provide technical assistance to the FNU which would focus on the inclusion of nutritional considerations in agricultural policy planning. The evaluation of different components of the project would help develop national replicable and cost effective nutrition delivery systems which would focus on design of appropriate agricultural and industrial policies and programs to optimise nutritional benefits to the vulnerable sections of the lower 40 percent of Indonesia's population. The staff of the Project Director would utilize these studies and the contributions of CRDN, FTDC and FNU to develop a national program to be presented through the Technical Commission to the Ministerial Committee by the end of the project period. The draft of the national food and nutrition program would be reviewed by BAPPENAS in consultation with the Bank. During negotiations, agreement was reached that the project results would be utilized for formulation and execution of the national nutrition program.

Capital Works

3.37 The project includes construction of laboratory buildings (477 m<sup>2</sup>) together with associated utilities, libraries and auditorium, 32 staff houses and renovations (2200 m<sup>2</sup>) of existing buildings (for details see Annex 10). Base costs which have been prepared by a local firm of consultant architects and scrutinised by the appraisal mission, have been updated to June 1976. They

follow appropriate guidelines laid down by the Government and are considered satisfactory. All preliminary plans have been completed, detailed drawings are being prepared under the guidance of a task force of experts and all sites have been selected. The implementation of the civil works would be through the Chief Engineer of the Ministry of Health.

Technical Assistance (US\$3.0 million)

3.38 The project would provide a total of about 40 man-years of Consultants, of which about 17 man-years are expected to be foreign, estimated to cost US\$1.5 million, financed under different components. (Annex 13 contains a schedule of technical assistance and the detailed terms of reference for consultants are included in the relevant Annexes.) Two man-years of experts for CRDN and 8 man-years of experts for FTDC would be provided in the fields of community nutrition, food policy, nutrition research and food technology. Consultancies for nutrition education for about 4 man-years would include assistance for preparation of training manuals and advice on nutrition communication. For NIPP activities, a total of 7 man-years of consultants would be provided. At project management level, a management specialist (2 man-years) would advise the Project Director on the integrated operation of different components of the project, and an additional 15 man-years of short-term, local consultants would be available to assist in monitoring and evaluation and in the preparation of a national food and nutrition program. Two man-years of consultancy would be provided to strengthen the Food and Nutrition Unit set up under the Planning Bureau of the Ministry of Agriculture (see Annex 8b). Agreement was reached with the Government on the details of the technical assistance schedule included in Annex 13.

3.39 Fellowships included in the project would provide for training of 44 Indonesian experts either locally or abroad in nutrition and food technology. Short-term study tours are also provided under the nutrition education component for 7 staff members.

IV. COSTS, FINANCING, PROCUREMENT AND DISBURSEMENTS

4.01 Project Costs: Total costs of the proposed four-year project, including contingencies, are estimated at US\$26.0 million equivalent. Cost estimates by expenditure categories are given in Table 1 and by component in Table 2. Details are in Annex 11.

4.02 Base costs refer to estimated prices in June 1976. All operating costs are incremental. Physical contingencies have been applied at a rate of 10 percent to all civil works and at 5 percent to all other items. The provision for expected price contingencies has been computed based on the following projection of annual inflation rates: for civil works, 14 percent in 1976, 12 percent in 1977-79, and 10 percent in 1980; for equipment and services, 10 percent in 1976, 8 percent in 1977-79, and 7 percent in 1980.

4.03 Project Financing: Project costs would be financed by a Bank loan of US\$13 million covering the foreign exchange costs of US\$10.2 million and US\$2.8 million of local costs. The remaining US\$13 million would be financed by the Government of Indonesia.

4.04 Procurement: 1/ Civil works contracts in excess of US\$1.0 million -- mainly for construction of research and training facilities at the CRDN, the FTDC and the Nutrition Academy (US\$5.9 million) -- would be awarded on the basis of international competitive bidding in accordance with the Bank's guidelines. Contracts below this amount would be awarded on the basis of competitive bidding, advertised locally, with no restriction on foreign bidding, and in accordance with normal government procedures which are satisfactory to the Bank. For purpose of bid comparison for civil works contracts, local contractors would receive a preference of 7-1/2 percent. Indonesia has a viable local contracting industry and it is expected that local contractors would win all bids for civil works. Research and information equipment (US\$2.5 million) is specialized in character and service after sales is of critical importance. This would be procured locally on the basis of competitive procurement procedures involving the solicitation of at least three price quotations. Contracts for equipment, including furniture, which cannot reasonably be grouped in packages of at least US\$50,000 equivalent, could be procured on the basis of competitive bidding based on local advertisement, in accordance with normal government procedures, which are satisfactory to the Bank. Contracts in excess of US\$50,000 would be awarded on the basis of international competitive bidding, in accordance with the Bank's guidelines; domestic manufacturers would be allowed a preferential margin of 15 percent, or the existing customs duty, whichever is the lower, over the c.i.f. price of competing imports. With respect to vehicles (US\$520,000), procurement would be on the basis of international competitive bidding, subject to Bank guidelines. The Government has given assurances that vehicles imported under the project would be exempt from existing import restrictions. For the start-up of the project ten vehicles would be procured locally for which finance up to 40 percent of local costs would be provided. Selection of consultants paid for by the project would be made in accordance with Bank guidelines.

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1/ Costs in this section are shown without physical and price contingencies.

4.05 Disbursements: The loan would meet 50 percent of the project costs. Disbursement would be made on the following basis:

- (a) 100 percent of costs for both foreign and local consultants, fellowships and project staff in the Office of the Project Director;
- (b) 100 percent of the c.i.f. value of directly imported equipment, library supplies and furniture, 95 percent of the ex-factory price of equipment manufactured locally, and 65 percent of imported equipment procured locally;
- (c) 100 percent of the c.i.f. value of imported vehicles, and 40 percent of the total cost of vehicles procured locally; and
- (d) 80 percent of civil works expenditures.

Undisbursed funds would be available for reallocation to other components or activities related to the project, contingent on Bank approval. The estimated disbursement schedule is shown in Annex 12. Expenditures for consultant architects incurred after October 1975 would be financed retroactively from the proposed loan up to a total of US\$50,000 equivalent.

4.06 Accounts and Audit: Each of the project entities would maintain separate accounts of expenditures under the project, which would be audited annually by the government auditors according to standard practice. The Project Director would maintain accounts of his own expenditures under the project together with statements of project expenditures by participating entities. Copies of audited accounts of project expenditures would be forwarded to the Bank by the Project Director within four months of the end of each fiscal year. During negotiations the Government has given assurances that these procedures would be followed.

Table 1: EXPENDITURE BY CATEGORIES

	Indonesian Rupiah (Million)			US Dollars (Thousand)			Base	
	Local	Foreign	Total	Local	Foreign	Total	FE%	Costs%
1. <u>Civil Works</u>	1,550	905	2,455	3,735	2,180	5,915	36.9	31.5
2. <u>Vehicles &amp; Equipment</u>								
1. Vehicles	39	177	216	95	425	520	81.7	2.8
2. Equipment	129	920	1,049	310	2,218	2,528	87.7	13.4
Sub-Total 2.	168	1,097	1,265	405	2,643	3,048	86.7	16.2
3. <u>Technical Assistance</u>								
1. Advisors	115	489	604	278	1,178	1,456	80.9	7.7
2. Fellowships	337	305	642	813	735	1,548	47.5	8.3
Sub-Total 3.	452	794	1,246	1,091	1,913	3,004	63.7	16.0
4. <u>Incremental Operating Costs</u>								
1. Salaries	900	-	900	2,169	-	2,169	-	11.5
2. Health Activities	15	56	71	37	135	172	78.5	0.9
3. Education Materials	174	21	195	420	50	470	10.6	2.5
4. Books and Journals	31	94	125	75	225	300	75.0	1.6
5. Travel	126	7	133	304	17	321	5.3	1.7
6. Mass Media	37	5	42	90	10	100	10.0	0.5
7. Food Supplement	127	-	127	307	-	307	-	1.6
8. Other	652	58	710	1,571	139	1,710	8.1	9.1
Sub-Total 4.	2,062	241	2,303	4,973	576	5,549	10.4	29.4
5. <u>Agricultural Activities</u>	282	8	290	680	20	700	2.9	3.7
6. <u>Evaluation</u>	217	29	246	522	70	592	11.8	3.2
Base Cost	4,731	3,074	7,805	11,406	7,402	18,808	39.4	100.0
Physical Contingency	306	202	508	738	487	1,225	39.7	6.5
Price Contingency	1,521	959	2,480	3,666	2,311	5,977	38.7	31.8
Total Project Cost	6,560	4,233	10,793	15,810	10,200	26,010	39.2	138.3

Table 2: SUMMARY OF COSTS BY COMPONENTS

<u>Component</u>	Indonesian Rupiah (Million)			US Dollars (Thousand)			<u>FE%</u>
	<u>Local</u>	<u>Foreign</u>	<u>Total</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>	
Center for Research and Development in Nutrition	1,402	1,030	2,432	3,380	2,481	5,861	42
Food Technology Development Center	1,013	1,280	2,293	2,441	3,084	5,525	56
Direct Nutrition Action Programs:							
(a) NIPP	826	248	1,074	1,990	597	2,587	23
(b) Action Program for Home/Village Gardens	207	-	207	500	-	500	-
(c) Action Program for On-Farm and Village Level Storage	75	8	83	180	20	200	10
(d) Anemia Prevention and Control Pilot Project	60	12	72	144	30	174	17
Nutrition Communication and Behavioral Change	337	90	427	811	217	1,028	21
Nutritional Manpower Training:							
Nutrition Academy	425	175	600	1,025	420	1,445	29
Assistance to Agricultural Extension Training	103	4	107	248	11	259	4
Organization and Management	235	196	431	567	472	1,039	45
Assistance for Formulation of a National Food and Nutrition Program	50	29	79	120	70	190	37
Total Base Costs	<u>4,733</u>	<u>3,072</u>	<u>7,805</u>	<u>11,406</u>	<u>7,402</u>	<u>18,808</u>	<u>39</u>
Physical Contingency	306	202	508	738	487	1,225	40
Price Contingency	<u>1,521</u>	<u>959</u>	<u>2,480</u>	<u>3,666</u>	<u>2,311</u>	<u>5,977</u>	<u>39</u>
Total Project Cost	<u>6,560</u>	<u>4,233</u>	<u>10,793</u>	<u>15,810</u>	<u>10,200</u>	<u>26,010</u>	<u>39</u>

V. ORGANIZATION AND MANAGEMENT

A. Project Organization (See Annex 8a)

5.01 Each of the components of the project would be implemented within the existing organizational structure of the Government. The table below shows the various ministries concerned with the different components. While they involve different facets of the Government, they comprise of activities which can proceed in parallel for the most part and are not dependent on one another. The project is, therefore, relatively simple to implement once the specific roles of different agencies are clearly defined, as has been done by the Government. The primary responsibilities are as follows:

<u>PROJECT COMPONENT</u>	<u>ADMINISTRATIVE MINISTRY</u>
Center for Research and Development in Nutrition	Health
Food Technology and Development Center	Education
Nutrition Intervention Pilot Project	Health/Home Affairs
Home/Village Gardens	Agriculture
Storage	Agriculture/Education (FTDC)
Anemia Prevention	Transmigration, and Manpower Cooperatives/ Agriculture/Health
Nutrition Education	Health
Nutrition Academy	Health
Assistance to AETE	Agriculture
Organization & Management	Health/Home Affairs/ Agriculture/Education
Formulation of a National Food and Nutrition Program	Health/Agriculture/BAPPENAS

5.02 The project will be implemented over a 4 year period, April 1, 1977 to March 31, 1981. The closing date will be March 31, 1982. Annex 14 contains a schedule of key implementation actions.

5.03 The overall management of the project would rest with the Director General of Community Health in the Ministry of Health, the designated Project Director. The Project Director would be assisted by a full-time project manager, designated as Executive Secretary, a Deputy Executive Secretary and special staff for finance and procurement. Their job description and terms of reference are given in Annex 8a. A separate Monitoring and Evaluation Unit consisting of two planning officers would also report to the Executive Secretary. Utilizing technical assistance funds under this project, the Project Director and his staff would set up a part-time panel of experts. In addition, the project provides a full-time management expert to assist the Project Director in the first two years of the project. To ensure the full cooperation of the Ministries of Home Affairs, Education and Agriculture, a part-time Co-director will be nominated from each of these ministries to work in close cooperation with the Project Director in identifying and solving problems of interministerial coordination.

5.04 The Project Director would be responsible for (i) monitoring the progress of the project, (ii) ensuring interministerial and agency coordination, and (iii) coordinating the activities of the different components. He would ensure also the provision of adequate appropriations under the different ministerial budgetary requests and coordinate the flow of funds to various project entities. The Project Director would have the responsibility for making withdrawal requests to the Bank.

5.05 The Project Director, the three Co-Directors, the Executive Secretary and the Coordinator of NIPP would be appointed in consultation with the Bank. Assurances to this effect were obtained. The current Director General of Community Health, a person with excellent managerial capabilities and the administrator of the successful rural health program, will be the first Project Director. Subsequent to negotiations and in preparation for project implementation, the Government has also appointed the Co-Directors of the Ministries of Home Affairs, Education and Agriculture, the Executive Secretary and the NIPP Coordinator.

5.06 The CRDN in the Ministry of Health, and the FTDC in the Ministry of Education, would be administered by their respective directors, assisted by financial and procurement staff. Both institutes would liaise closely and would coordinate their work with the Agency for (Agricultural) Research and Development (ARD), the Directorate General of Food Crops and the Agency for (Agricultural) Education, Training and Extension (AETE). To this end, a Research Coordinating Committee of Directors would be established. It would report annually through the Project Director to the Ministerial Committee (para. 2.23). The Directors of CRDN and FTDC would assume chairmanship in rotation. Membership of the Committee would include a representative of BAPPENAS, of the Ministries of Agriculture, Health and Industry; a sociologist from IPB; and a representative from the Directorate General of Food Crops and the AETE so that problems of implementation and extension which could not be solved through normal day to day communications would be brought to the

notice of the research institutes. Provision has been made under technical assistance for internationally recruited experts to assist the Committee. The Government has given assurances during negotiations that the Board would be set up no later than August 1, 1977 on terms and conditions satisfactory to the Bank and that annual progress reports of research activities be sent to the Bank.

5.07 The NIPP component would be administered at the national level by a Coordinator stationed in the Ministry of Health, whose staff would include three assistant nutrition program officers. The Coordinator would report directly to the Director General of Community Health, Ministry of Health. In each province where NIPP would operate, the Governor of the Province would ensure the coordination and implementation of the nutrition program. At the Kabupaten level, the Bupatis (who are under the overall supervision of the Ministry of Home Affairs) would be responsible for management and control of NIPP activities. Within the provincial government services the implementation of the program would be the responsibility of the Inspector of Health. To ensure feedback and adequate beneficiary interaction consultations with the village communities will take place through the mechanism of the nutrition advisory committees.

5.08 The Anemia Prevention and Control Project for plantations would be administered in the field by NILHOH through delegation to RILHOHs under the Ministry of Transmigration, Manpower and Cooperatives. Each would work in close collaboration with the NIPP Coordinator and the Directorate General of Plantations, Ministry of Agriculture who would assign appropriate staff to handle the program. The training and nutrition education component would be the responsibility of the Chairman for the Center of Manpower Training in the Ministry of Health.

#### B. Monitoring and Evaluation (See Annex 8a)

##### Progress of Components-Monitoring

5.09 To ensure that implementation of the project meets the prescribed goals, data on key indicators of progress would be reported monthly to the Project Director by each Project Officer. These reports would be reviewed by the Monitoring and Evaluation Unit and recommendations would be made to the Executive Secretary who would initiate remedial action. The formats of the reports would be designed in such a manner as to help analyse the extent of progress in critical areas of work and act as early warning signals of delay. Each Project Officer would indicate in his report to the Project Director the types of action taken at his level to anticipate, correct and avoid slippages. Once a quarter, the Project Director would conduct a meeting of Project Officers and other agencies concerned with implementation, with a view to removing bottlenecks and ensuring coordination. The Project Director would be responsible for the preparation of semi-annual reports to the BAPPENAS, the Ministries of Health, Agriculture and People's Welfare, and to the Bank.

These reports would cover particularly the progress of civil works, procurement, recruitment and training of key personnel, research on village-level storage and processing and implementation of field-level activities on the NIPP and the plantation components.

#### Technical Evaluation

5.10 Important aspects of the project are the effectiveness of evaluation of different combinations of activities in NIPP areas in improving the nutritional status and of the delivery system for iron supplementation on plantations in order to raise labor productivity. This evaluation would be carried out by experts of CRDN, particularly by the Divisions of Community Nutrition and Socioeconomics. CRDN would design the initial baseline, intermediate and final sample surveys of nutritional status and supervise the data collection. Similarly, CRDN and sociological experts of the Agricultural University would assist in designing and carrying out surveys of nutritional behavioral responses to the nutrition education tests proposed in the project.

5.11 The Research Coordinating Committee would evaluate the research programs of the CRDN and FTDC and advise on redirection of resources, where necessary, to high priority problem areas.

#### Program Evaluation

5.12 Program evaluation would be undertaken directly by the Monitoring and Evaluation Unit under the Project Director, with assistance from consultants, both local and foreign. 1/ The resources of CRDN and FTDC would also be available for this purpose. Studies to be undertaken would include:

- (a) Review and analysis of project results, based on actual costs, with a view to formulate nationally replicable food and nutrition activities.
- (b) Review of the operational significance and costs of research programs initiated and carried out by CRDN and FTDC, with special emphasis on replicability of findings.
- (c) Relationships between nutrition and productivity.
- (d) Development of improved methods of food processing and its effect on employment.

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1/ An advisory panel of experts is provided for under the project, to advise the Project Director.

## VI. BENEFITS AND JUSTIFICATION

6.01 By the end of the project period, the CRDN and FTDC would be fully established and oriented towards their primary role of problem solving. The CRDN would have a professional staff of 44, and the FTDC would have 23 professionals. Both institutions would have teaching functions in addition to their applied research duties. The Nutrition Academy would be training students at the rate of 60 graduates per year to the Bachelor of Science level for service in institutions including CRDN as well as in community nutrition activities.

6.02 It is also expected that theoretical and practical training in program management would have been given by the CRDN and the Academy of Nutrition to about 65 nutrition program officers and assistant nutrition program officers. Also, 183 village assistant program officers and about 4,800 members of cadres for nutrition extension services would have been trained.

6.03 By the end of the three-year operational NIPP period in each selected village, the incidence of PCM would be sought to be reduced by 60 percent of the initial rate and infant mortality reduced by 20 percent. In the plantations the incidence of nutritional anemia is expected to be reduced by 60 percent. 1/ Coverage would also be offered to combat vitamin A and iodine deficiencies.

6.04 The Food and Nutrition Unit to be set up in the Ministry of Agriculture is expected to be fully operational and staffed by the end of the project period. It is anticipated that this unit will have become instrumental in introducing and assessing nutritional considerations in agricultural research, planning and extension.

6.05 A program for improved village-level food storage and village-level food processing would also have been designed, implemented and evaluated with a view to replication on a national scale within a year after the end of the project period. In addition, arrangements would have been set up for coordination of research programs in agricultural food technology and nutrition research institutions with other agricultural research institutes. Among the research output would be improved crop varieties with nutritionally desirable qualities, more efficient techniques for food processing and storage, and methods for food fortification with necessary micronutrients. Also, techniques of nutrition education using traditional and new media would have been tested in the field and the national nutrition education campaign would have better tools to work with.

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1/ The attainment of these targets will be monitored with reference to the results of the baseline surveys.

About 65 nutritionists trained in the Academy would be available to extend community nutrition activities. Agricultural extension staff would have been trained in the areas of nutrition and home gardening which would broaden the scope of the extension system. This would particularly benefit the rural poor.

6.06 In the NIPP areas, production and effective availability of nutritious foods would have been increased through home gardens, better storage and processing. A simplified nutrition surveillance system together with improved health care would have been established in these villages. In the selected plantations an effective delivery system for iron supplementation would be established.

6.07 In the short run, the proposed project would strengthen Indonesia's institutional capacity to determine and analyze the nature and dimensions of the national nutrition problem and to develop means of optimizing the use of national food resources as prerequisites to preparing and implementing a national nutrition program. Bank support would help in institutionalizing an effective approach to coordination, execution and evaluation of this effort and the subsequent nationwide nutrition program.

6.08 In the long-run, the implementation of the project-developed nutrition strategy would bring benefits by optimizing the use of food resources and by increasing labor productivity. This in turn would improve the income of those whose malnutrition is a direct result of their poverty. Food availability would be raised through coordination with programs intended to expand production of staple foods for local consumption, and through improved means of village-level food storage and processing. To ensure that this food availability benefits the poorest, requires not only that appropriate agricultural distribution arrangements be adopted but also that the poor are educated as to their nutritional needs and how most economically to meet them. This is a major objective of the project. A major thrust of the Government's Development Plan is the creation of additional employment opportunities. Part of the problem of employment in Indonesian circumstances arises from the limitations on the productive capacity of the work force associated with the generally poor nutritional status. This problem would be addressed under the proposed project.

6.09 The proposed project is intended to reach the poorest segment of the population, and within that group to concentrate on those most vulnerable to malnutrition. Benefits accrued to infants, pre-school children, pregnant and lactating women, while having the longest lead-time and being the most difficult to measure, nonetheless have the greatest impact in improving the quality of human capital formation (see para. 2.03). The returns to these preventive measures would derive from:

- (a) the improved quality and productivity of Indonesia's work force;

- (b) the better utilization of Indonesia's education system by a healthier group of students; and
- (c) a lesser burden on the health system.

The higher rate of survival of children also leads to a more suitable atmosphere for effective family planning campaigns and may, in the long run, reduce desired family size.

6.10 In addition to the national project benefits, other immediate side-benefits can be expected in NIPP areas. The NIPP operations build on existing nutrition information and activities, but differ from ongoing programs in respect to the magnitude of population covered, the range of inputs and baseline and final surveys. Benefits of these operations would include:

- (i) rehabilitation of over 30,000 children affected by PCM in 180 villages;
- (ii) nutrition education for about 110,000 families and 45,000 pregnant women and lactating mothers (of these 17,000 would receive food supplements);
- (iii) immunization of 100,000 children from infectious diseases;
- (iv) establishment of village storage and processing units;
- (v) establishment of 18,000 home and village gardens in 180 villages; and
- (vi) control of anemia through dietary supplementation to 3,000 plantation workers.

6.11 The project reflects the importance of women in development, both as beneficiaries of services provided and as staff of those project components providing the services. The majority of the village cadre personnel in the NIPP component would be women.

6.12 Specific benefits would also accrue from coordination of the proposed project with ongoing projects.

6.13 The proposed project carries an inherent risk because it involves investments in an area of relatively new activity. A risk specific to this project arises from the fact that its implementation involves many ministries and their coordinated actions. The Government, however, is now convinced of the need to strengthen interministerial coordination and for this purpose has decided to set up a flexible organizational structure to meet the demands of such a project. The components are being handled within the existing administrative structure which also provides interministerial coordinating

committees. The risks of the project are acceptable in view of the substantial short and long-term benefits expected of this project.

#### VII. AGREEMENTS REACHED

7.01 During negotiations, agreement was reached with the Government on the following principal points:

- (a) with respect to the NIPP program, (i) the plans of operations for the initial two Kabupatens would be submitted to the Bank for approval prior to implementation and not later than August 1, 1977; (ii) the selection of new Kabupatens would be in accordance with criteria established in consultation with the Bank. The third and fourth Kabupatens would be selected not later than October 1, 1977. The remaining three Kabupatens would be selected not later than August 1, 1978; and (iii) a review of the NIPP would be conducted at the end of the second year of project operation with a view to determining program effectiveness and any necessary changes in program direction and content (see para 3.22);
- (b) the Government and the Bank would review the results of the home/village garden program after the end of the third year of NIPP operations and determine whether this program should be prepared for more general replication (see para. 3.23);
- (c) with respect to the action program for home/village gardens, the Directorate General of Food Crops, Ministry of Agriculture, would allocate the ten necessary additional extension staff to the selected NIPP areas (see para. 3.24);
- (d) vehicles imported under the project would be exempt from existing import restrictions (see para. 4.04);
- (e) appropriate accounting and auditing procedures would be followed and copies of audited accounts of project expenditures would be forwarded to the Bank by the Project Director within four months of the end of each fiscal year (see para. 4.06);
- (f) the Project Director, the three Co-Directors, the Project Manager and the Coordinator of NIPP would be appointed in consultation with the Bank (see para. 5.05); and
- (g) the Research Coordinating Committee would be set up no later than August 1, 1977 on terms and conditions satisfactory to the Bank (see para. 5.06);

- (h) project results would be utilized for formulation and execution of the national nutrition program (see para. 3.36); and
- (i) the details of the technical assistance schedule (see para 3.38).

7.03 Subsequent to negotiations and in preparation for project implementation, the Government has appointed the Project Director, the Executive Secretary, the Co-Directors of the Ministries of Home Affairs, Education and Agriculture and the NIPP Coordinator (see para. 5.03).

7.04 The proposed project would be suitable for a Bank loan of US\$13 million, with a 20-year maturity including a grace period of 4 1/2 years. The borrower would be the Republic of Indonesia.



INDONESIA NUTRITION DEVELOPMENT PROJECT

Nutritional Status and Food Habits

1. Indonesia, with the fifth highest population in the world, has a land area of 575,000 square miles, consisting of thousands of inhabited islands covering one eighth of the world's circumference. While major cultural and ecological differences exist between the various regions, there are common nutritional problems: protein-calorie malnutrition (PCM), vitamin A deficiency, iodine deficiency and nutritional anemia.

Protein-Calorie Malnutrition

2. Based on the available data on nutritional status, food consumption and food production, widespread protein-calorie malnutrition is manifest. Close to one-third of all children under the age of five are estimated to suffer from moderate to severe PCM. The severe form, affecting 2-5 percent of young children, ranges across the spectrum of protein-calorie malnutrition from kwashiorkor 1/ at one extreme to marasmus 2/ at the other. Kwashiorkor is due to a quantitative or qualitative deficiency of protein, but calorie intake may be adequate (e.g. where cassava is the staple). Marasmus is due to a continued restriction of both calories and protein, as well as other nutrients. In Indonesia, the majority of the PCM cases are of the marasmic type. In all manifestations of PCM, failure of growth is the first and most important sign. The severe cases require hospitalization and, despite skilled treatment, the mortality rate is significant.

3. For every severe case of PCM, there are many more cases which are mild or moderate, in which individuals are underweight or undersized due to dietary deficiency. Apart from delayed physical development, such children are at great risk as they are liable to develop severe forms of PCM if they

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1/ In 1933, Dr. Cecily Williams first described this form of PCM. She called it by its local Ghanaian name - Kwashiorkor, which means "the sickness the deposed child gets when the new baby is born", indicating the result of sudden weaning. The name has been accepted in medicine. In kwashiorkor there is a failure to thrive, loss of appetite, diarrhea, edema and a generalized unhappiness or apathy; a characteristic dermatitis called "flakey-paint" is usually present and the hair is often sparse, thin and reddish.

2/ Marasmus means to waste away and is the childhood equivalent of starvation in adults. Marasmus is characterized by muscle wasting, loss of subcutaneous fat, and very low body weight.

suffer gastro-intestinal or respiratory disease or infections such as measles, tuberculosis or malaria. PCM increases morbidity and mortality rates of young children, retards the physical growth of survivors and impairs mental development. In Indonesia, the infant mortality rate ranges between 110-150 per thousand, compared to a rate of 38 in neighboring Malaysia and 68 in the Philippines. Indonesia's high infant mortality rate is, to a great extent, the result of the heavy incidence of PCM.

#### Vitamin A Deficiency

4. The incidence of vitamin A deficiency in Indonesia, is among the highest in the world, particularly among children. Xerophthalmia, 1/ which competes with trachoma as a cause of blindness, is due to prolonged vitamin A deficiency. A xerophthalmia percentage of 3.1 was recorded for 375,000 eye patients reporting to health clinics throughout Indonesia during 1972. A study conducted in the 1960s 2/ shows that blindness caused by vitamin A deficiency in East Java is 250 per 100,000. The incidence of xerophthalmia among children has been found to be 4-5 percent in rural Java with rates of up to 22 percent in urban squatter areas.

5. The serious incidence of vitamin A deficiency led to the implementation during 1973/74 of a pilot project to distribute high dosage vitamin A capsules in selected areas of Java to children between 12 and 48 months of age. However, a nationwide program for vitamin A capsule distribution was decided against because of high recurrent costs. As intake of vitamin A capsules is only a short term solution, efforts are needed to increase the consumption of foods naturally rich in vitamin A.

#### Iodine Deficiency

6. The prevalence of goiter, caused by iodine deficiency, has long been recognized. In the early stages, goiter may cause no symptoms, but untreated goiter causes difficulty in breathing, coughing and voice changes. Surveys undertaken in 1972 3/ in the provinces of North and West Sumatra, East

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1/ Xerosis means abnormal dryness of the eye or skin. Xerophthalmia covers the whole range of ocular changes, from mild local or generalized xerosis of the conjunctiva to the most severe type involving the cornea.

2/ T.D. Johanna, "Causes of Blindness in and Around Surabaya, East Java." Thesis, University of Indonesia, Jakarta, 1968.

3/ "The Prevalence of Endemic Goiter Among School Children in Some Parts of Sumatra, Java and Bali, Indonesia." Djumadios et al Pen. Gizi, pp. 24-30, 1972.

Java and Bali, indicated a high incidence of goiter (60 to 80 percent) among the children surveyed. Based on the results of 35 studies of endemic goiter, it has been estimated 1/ that at least 10 million people are affected by goiter, 100,000 by cretinism and 500,000 by the early stages of cretinism. Cretinism, as a result of severe iodine deficiency, manifests itself through a wide range of symptoms: mental retardation, impaired physical development (short stature), deafness, deaf-mutism and neurological abnormalities.

#### Nutritional Anemia

7. The widespread existence of nutritional anemia, mostly due to iron deficiency, has been recognized in Indonesia only recently. Prior to 1970, investigations on nutritional anemia had been confined to pregnant women in hospitals. Joint studies by the Bank and the Indonesian Nutrition Research Institute undertaken in 1973 2/ revealed that Indonesia has the highest country incidence (28-52 percent) of nutritional anemia ever recorded in a male population except during famine conditions. The study concluded that a major factor that affects labor productivity is anemia caused by iron deficiency.

8. A 1974 study 3/, attempting to correct nutritional anemia, revealed that the productivity of anemic workers was 20 percent less than the the productivity of non-anemic workers. Treatment of the anemic workers by oral iron therapy for a period of 60 days raised their productivity to the same level as the non-anemic workers.

#### Food Patterns and Habits 4/

9. Unmixed white rice is the preferred basic food in Indonesia. Where rice is not available in sufficient quantities or is too costly, the basic food becomes a mixture of rice and corn, cassava or sweet potatoes. The main source of animal protein is salted and dried fish. In most parts of Indonesia, meat

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1/ A. Querido, "A Proposal for the Eradication of Goiter and Cretinism in Indonesia", University of Leiden, 1973.

2/ D. Karyadi, and S. S. Basta, "Nutrition and Health of Indonesian Construction Workers", IBRD Staff Paper No. 152 (1973).

3/ S.S. Basta and A. Churchill, "Iron Deficiency and the Productivity of Adult Males in Indonesia", IBRD Staff Paper No. 175 (1974).

4/ Social and Cultural Aspects of Food Patterns and Food Habits in Five Rural Areas in Indonesia; Mely G. Tan et al, National Institute of Economic and Social Research, Jakarta. Mimeograph, 1970.

and eggs are not consumed daily; consumption of animal protein is lowest in Central and East Java. Pulses are the most readily available source of protein. However, they and other sources of vegetable protein are infrequently consumed. Leaves of cassava, sweet potato and papaya occasionally form part of the menu. Fruits are consumed in season, provided there remains a surplus after selling.

10. Food consumption patterns, besides being affected by income, are influenced by sex, age, festivals, customs, taboos, attitudes and external influences. Ritual meals relate to the life cycle of the individual, to Moslem and Hindu-Dharma religious festivals and to events related to the agricultural cycle. Such occasions call for elaborate meals, during which the men are accorded priority in consumption. Women's food habits are restricted by custom, taboos and beliefs. Few taboos related to males.

11. Breastfeeding is still widely practised. Weaning occurs between the first and second year but may be later. In addition to their own milk, mothers normally provide a supplement consisting of soft mashed rice or banana. After the second year no special food is prepared for the child, who then shares the family meal.

12. High status foods are white rice, meat, chicken, eggs, spinach, cabbage, longbeans, big fish and bean sprouts, but they are regarded as being suitable only for special guests or special occasions. Low status foods such as, bulgur, cassava, salted/dried fish, corn, mixed rice, and sweet potato leaves are eaten on a daily basis.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Center for Research and Development of Nutrition

General Objectives

1. In 1975, the Nutrition Research Institute became the Center for Research and Development of Nutrition (CRDN). It had been established under the Ministry of Health as a national organization responsible for meeting national nutrition policy and planning needs, providing baseline data for the evaluation of intervention programs and meeting technical training and educational requirements. The CRDN is supervised by the National Institute of Health, Research and Development. Presently, the CRDN is ill-equipped and understaffed and cannot undertake the needed operational research. Specifically, the project component would:

- (a) expand the physical structure of the Center by constructing and/or enlarging laboratories, the auditorium, library and staff housing (see Annex 10);
- (b) strengthen the administrative and scientific capabilities of the Center by expanding the professional staff from the present 12 to a total of 44; through recruitment of consultants and new staff, and training of existing staff (see Appendices 2 and 3);
- (c) improve and widen the types of research already undertaken through the acquisition of the necessary equipment;
- (d) arrange for monitoring and evaluation of nutrition intervention programs;
- (e) initiate studies and conduct research on the economic and social aspects of food and nutrition needed to support policy formulation and planning by BAPPENAS and other related ministries and agencies; and
- (f) provide technical support and facilities for practical experience - both in laboratories and in the field - to students allied to different academic nutrition programs.

2. The Nutrition Research Institute (NRI) was attached until 1975 to the Directorate of Nutrition, under the Director General of Medical Care in the Ministry of Health. Its objectives had been to identify nutritional problems in communities, conduct research studies for improved nutritional status and serve as a research and information center.

3. In 1974 the total budget for the Institute was about Rp 48,870,000 (US\$118,000) of which one third was for routine administration and two thirds for research and development. The funds are allocated by the Ministry of Health and in the last four years there has been a steady and significant increase in the research and development budget. The 1975 budget was Rp 77,057,000 (US\$185,679), an increase of 58 percent over the previous year.

4. The Institute has made a very substantial contribution to research and much of the effort has been directed at important nutritional problems of the country but limited in scope and largely biomedically oriented. Part of the research has been done in collaboration or consultation with other leading Indonesian and international institutions.

#### The Need and Rationale

5. There is a lack of basic nutritional data on the causes and extent of malnutrition and of efficient means for controlling various forms of malnutrition. The Government has recognized the need for increased research for a variety of interventions to improve nutritional status and for collection of baseline data relating to nutrition. The CRDN can play an important role in this coordinated effort only if its present resources are strengthened and expanded.

6. The proposed project would expand the role of the Center through an increase of its staff, buildings and equipment. With the expansion and strengthening of the Center, it would become a national organization with a diversified research program which would be relevant to the needs of planners as well as those responsible for implementing the proposed nutrition development project. The Center would be responsible and have competence for:

- (a) diagnosing and monitoring the nutritional status of the population of the country;
- (b) determining the causative factors of Indonesia's nutritional problems and their relative significance;
- (c) identifying possible solutions, preparing action programs and advising and cooperating with responsible agencies in their implications;
- (d) cooperating in the training of specialists and non-specialists dealing with nutrition related activities;
- (e) providing advice on content of nutritional curricula development and cooperating in nutrition education activities; and
- (f) providing the technical information required for nutritional planning and program development at national level.

Proposed Structural Organizational Structure

7. The reorganization of the Center coincides with the Government's interest in developing a national nutrition plan and the simultaneous formulation of action programs. To be useful for planning, research has to deal initially with symptoms and causes of malnutrition which require a broad combination of capabilities in different disciplines and an organization to facilitate integrated operations. These elements have been taken into consideration in the preparation of the proposals.

8. The Center for Research and Development of Nutrition would be reorganized into four divisions: The Division of Food Science, Division of Biochemical Nutrition, Division of Community Nutrition and the Division of Nutritional Socio-Economics.

The Work Programs of the Center

9. The work program of the Center would be oriented toward applied research, with participation in most cases of more than one division. The following briefly indicates the primary responsibilities of each division.

(a) Division of Food Sciences

- (i) Prepare up-to-date Food Composition Tables for Indonesia and determine the nutritive value of foods now available.
- (ii) Study possible ways of improving the nutritional value of presently available and commonly consumed foods, by fortification, adequate combinations and special processing (including fermentation).
- (iii) Study possible ways of increasing the consumption and/or utilization of available but not commonly consumed food resources.
- (iv) Explore the development of new foods on the basis of available or potentially available sources.
- (v) Study factors limiting or interfering with nutrient utilization in commonly consumed foods and ways of eliminating such factors.
- (vi) Study the nutritional value of new or modified foods.

(b) Division of Biochemical Nutrition

- (i) Study ways of satisfying nutritional requirements, particularly of vulnerable groups, with locally available foods.
- (ii) Develop and/or test methods for the diagnosis of the nutritional status of individuals.

- (iii) Study the effects of physiological or clinical conditions on food and nutrient utilization.

(c) Division of Community Nutrition

- (i) Assess the nutritional status of population groups (surveys and surveillance).
- (ii) Study the epidemiology of nutritional problems.
- (iii) Develop and/or test nutrition interventions at the local level.
- (iv) Study the effects and methods of prevention, treatment and rehabilitation of common nutritional deficiencies (PCM, nutritional anemias, vitamin A deficiency and endemic goiter).
- (v) Develop the content and methodology of nutrition education messages and test their effectiveness.

(d) Division of Nutritional Socio-Economics

- (i) Study national (or regional) food availability in relation to recommended allowances and establish desirable goals for food availability and consumption.
- (ii) Study economic and social factors affecting food consumption.
- (iii) Analyse the relative value of different national policies and programs to improve nutrition, assess their possible constraints and recommend alternative solutions.
- (iv) Evaluate the nutritional effects of different intervention programs at the community level.

Supporting Services

10. Supporting services would include a statistical unit, a library and an audio-visual unit which would have document reproduction facilities. The statistical unit would be headed by a statistician, with sufficient experience of computer programming in order to carry out the design and analysis of baseline data and other surveys. An improved library with a competent librarian and information retrieval system would be provided. A service for production of audio-visual aids and document reproduction would have necessary equipment and one technician.

Training Services

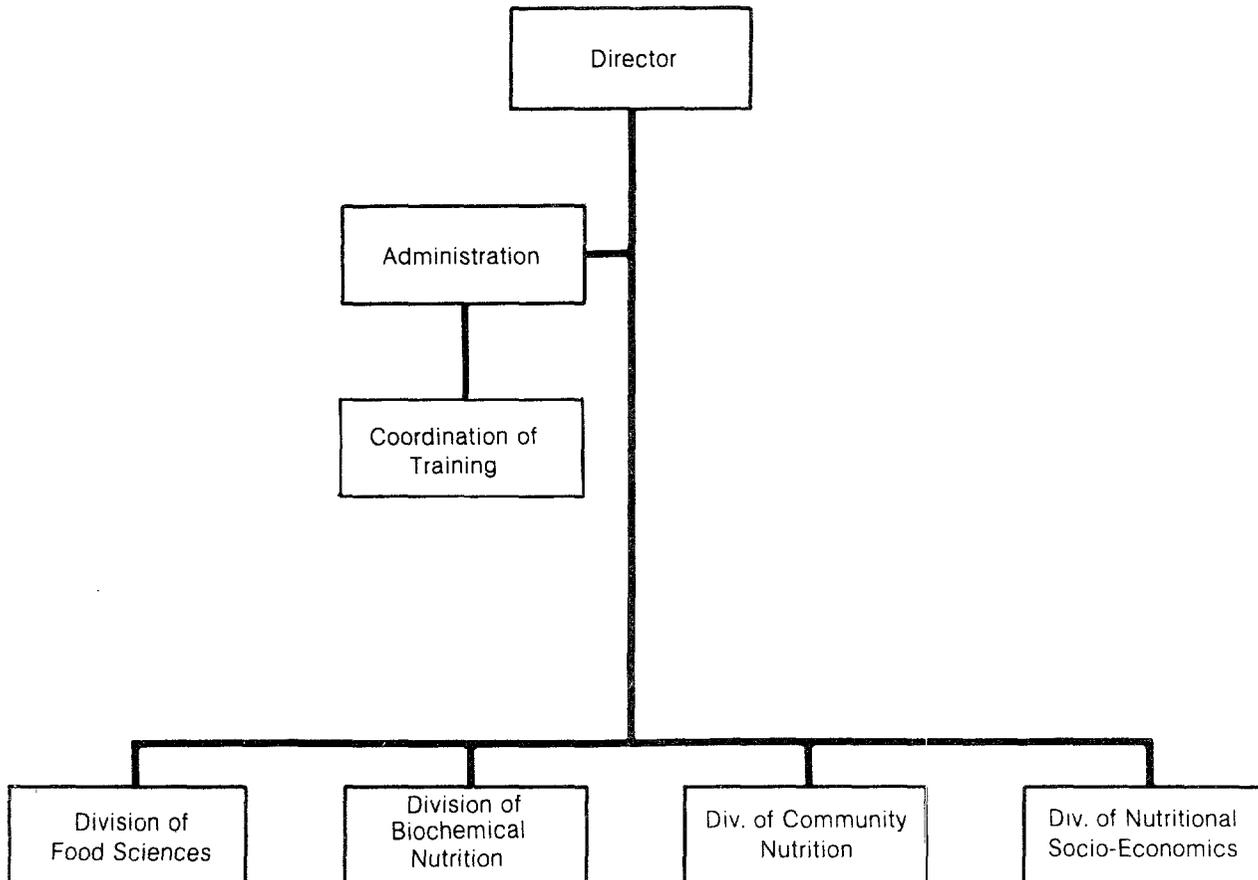
11. In addition to its main research functions, the Center would serve as an important training center, providing facilities for practical work both in the laboratories and in the field to students in different academic programs. All four divisions of the Center would be involved in this training. Through this the Center's work would be strengthened by stimulating the academic interests of all staff members. Collaboration with the Agricultural University, Bogor (IPB) and the Agency for (Agricultural) Research and Development to undertake joint research is contemplated. In addition, use of the facilities of the Center for national and international seminars and conferences would be encouraged. The Center would continue to provide facilities on an individual basis to Indonesians and others who wish to engage in nutrition research leading to advanced degrees. The Director would be in charge of training coordination, assisted by the Administrative Division.

Administrative Services

12. For an efficient operation, the Center would require well-organized administrative services staffed by qualified personnel to deal with budgeting, accounting, personnel, maintenance and general services, purchases, supplies, and transportation. The Center would have a competent and experienced administrative officer and at least one officer in charge of purchases and supplies. The organizational structure of the Center is shown in the following chart.



**INDONESIA NUTRITION DEVELOPMENT PROJECT  
ORGANIZATIONAL STRUCTURE OF CRDN**





Staff Requirements and their Training Needs

13. Professional staff which would work full-time at the Center, with adequate remuneration, benefits and working conditions would be needed to expand the size and scope of the Center's activities. (Terms of references, see Appendix 3.) A four-year plan for recruitment and training of additional staff, and advanced training for existing staff has been formulated. This is summarized in Appendices 1 and 2.

14. Further needs for training can be determined only when the past training and experience of the new personnel, still to be recruited is evaluated. The project component includes fellowships for special training in research at suitable institutions abroad. The tables indicating the need for training of new staff are estimates based on present information of likely manpower availabilities.

15. The additional training for existing technical staff also depends to some extent on the training and experience of the new personnel recruited. Efforts should be made to ensure that staff training is in institutions which deal with development problems similar to those in Indonesia. Centers in developing countries should be used, as far as possible, for staff training.

Consultants

16. Consultant time of 24 man-months has been included. Job descriptions are in Appendix 4.

Costs

17. The total base costs of the component would be US\$5,861,000 of which 42 percent would involve foreign exchange. Details of civil works costs are given in Annex 10, an analysis of the total costs is in Annex 11 and details of training costs in Appendix 3.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Center for Research and Development in Nutrition

Staffing Requirements

<u>Year</u>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Professional (M.S. or higher)	12 <u>1/</u>	13	20	34	44
Technical	<u>16</u>	<u>22</u>	<u>40</u>	<u>68</u>	<u>88</u>
Total	28	35	60	102	132

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1/ Of these, 2 M.D.'s and 1 Ph.D. are part-time.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Center for Research and Development in Nutrition

Education and Training Requirements

	<u>Abroad</u>	<u>Indonesia</u>
	<u>Total Number</u>	
<u>Ph.D. Program</u>		
Food/Agriculture Economist	1	-
Program Analyst/Planner	1	-
Sociologist	1	-
Nutritional Epidemiologist	1	-
Medical Doctor/Public Health	1	-
Physiologist	-	1
Food Scientist	-	1
Nutritional Sociologist	-	1
Social Anthropologist	-	1
	<u>5</u>	<u>4</u>
<u>M.S./MPH</u>		
Physiologist	1	-
Public Health Nutritionist	1	2
Nutritional Biochemist	1	-
Hematologist	1	-
Veterinarian	1	-
Nutritionist	1	-
Food Scientist	2	-
Assistant Epidemiologist	1	-
Communication Technologist	1	-
Food Toxicologist	1	-
	<u>11</u>	<u>2</u>
<u>B.S.</u>		
Food Chemist	-	1
TOTAL PROFESSIONALS TRAINED	<u>16</u>	<u>7</u>
<u>Short-term Training and Visits (in man-months)</u>		
	<u>Man-Months</u>	
Director	3	-
Administrator	3	-
Heads of Divisions	12	-
Food Analyst	3	-
B.S. and Technicians	-	6
TOTAL MAN-MONTHS OF SHORT-TERM TRAINING AND VISITS	<u>21</u>	<u>6</u>

NOTE: The period of time required for Ph.D. and B.S. programs is 36 months and for M.S./MPH 24 months. The Ph.D. candidates would be selected from M.S. graduates.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Center for Research and Development in Nutrition

Phasing and Cost of Training in Indonesia  
(In Number of Man-Years and US\$)

Type of Training	<u>Yr. 1</u>	<u>Yr. 2</u>	<u>Yr. 3</u>	<u>Yr. 4</u>	<u>TOTAL</u>
Ph.D.	2	3	4	3	12
M.S.	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{4}$	$\frac{4}{16}$
Cost at \$3,250 per man-year	9,750	13,000	16,250	13,000 <u>1/</u>	<u>\$ 52,000</u>
B.S.	1	1	1	1	4
Cost at \$1,250 per man-year	<u>1,250</u>	<u>1,250</u>	<u>1,250</u>	<u>1,250</u>	<u>5,000</u>
Short term training for B.S. (in man-months)	2	2	2	-	6
Cost at \$1,250 per man-year	<u>208</u>	<u>208</u>	<u>208</u>	<u>-</u>	<u>\$ 624</u>
TOTAL COSTS	11,208	14,458	17,708	14,250	<u>\$ 57,624</u>

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1/ One of the Ph.D. trainees who would start in the third year would have to go on one year beyond the project period. The cost has been added to the fourth year.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Center for Research and Development in Nutrition

Phasing and Cost of Training Abroad  
 (Number of Man-Years and US\$)

Type of Training	<u>Yr. 1</u>	<u>Yr. 2</u>	<u>Yr. 3</u>	<u>Yr. 4</u>	<u>TOTAL</u>
Ph.D.	3	4	5	3	15
M.S.	$\frac{6}{9}$	$\frac{6}{10}$	$\frac{5}{10}$	$\frac{5}{8}$	$\frac{22}{37}$
Cost at \$7,500 per man-year	67,500	75,000	75,000	60,000 <u>1/</u>	<u>\$277,500</u>
Short term training and visits (in man-months)	12	9	-	-	21
Cost at \$7,500 per man-year	<u>7,500</u>	<u>5,625</u>	<u>-</u>	<u>-</u>	<u>\$ 13,125</u>
TOTAL COSTS					<u><u>\$290,625</u></u>

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1/ One of the Ph.D. trainees who would have to start in the third year would have to go on one year beyond the project period. The cost has been added to the fourth year.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Center for Research and Development in Nutrition

Qualifications of the Senior Staff Members - CRDN

1. Senior staff members should not only be professionally competent in their field, but should also have leadership capabilities and a wide understanding of problems outside their own discipline. Special care should be placed in the selection and training of the senior staff members, who would require to have the following qualifications:

Division of Food Sciences

2. Food scientist, agricultural chemist or food technologist; with training at the level of Ph.D. or equivalent. Must have basic knowledge of nutrition, understanding of the local conditions and with previous post-graduate research experience of at least 3-4 years.

Division of Biochemical Nutrition

3. M.D. or biochemist with an additional specialization in basic nutrition, a sound knowledge of physiology and metabolism and a previous post-graduate research experience of at least 3-4 years.

Division of Community Nutrition

4. M.D. or nutritionist with specialization in public health nutrition and solid basis in epidemiology. Adequate field experience and research capabilities.

Division of Nutrition Socio-Economics

5. Economist or nutritionist, with training at the level of Ph.D. or equivalent. Must have training and previous research experience in food and nutrition of at least 3-4 years.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Center for Research and Development in Nutrition

Qualifications of Consultants

Senior Nutrition Researcher With Experience in Nutrition Policy Planning (12 months)

1. Four to six visits totaling 12 months are foreseen for a senior advisor to advise the Director and to assist with the implementation of this component. This consultant must have experience in nutrition policy and planning in developing countries and in research programs of the type to be conducted by the Center. This consultant would provide continuing advice over the whole five-year period of the project.

Economist With Experience in Food Policy (6 months)

2. Two visits totaling six months are foreseen for an economist familiar with food policy of developing countries. It would be advantageous to have the same consultant on the two occasions. The first visit would be after the establishment of the new Division of Nutrition Socio-Economics and would entail work with the Director of the Center, the new Division Head and the staff to develop a detailed program of research and work for the Division. The second visit, 12-18 months later, would be to follow up on the activities, to provide advice on the research program and other activities, and to provide any other help called for by the Director and Division Head.

Community Nutrition Consultant (4 months)

3. This consultant would need to have special training and experience in nutrition survey methodology and in the evaluation of nutrition projects. He would advise the Division of Community Nutrition concerning its work program, paying particular attention to the methodology for collecting baseline data and for evaluation of programs. The same consultant might be used for survey and evaluation aspects for the NIPP section of the proposal, and guidance and advice on staffing training, research activities, etc. Two separate visits by this consultant might be needed.

Other Consultants (2 months)

4. Two months consultant time is left open to be filled according to ad hoc work needs of the Center. This period might be divided for short consultancies by persons with very special expertise, such as the assistance of a biochemist to establish a new analytic procedure or of a food scientist to help the Division of Food Sciences with some special aspect of their work.

INDONESIA NUTRITION DEVELOPMENT PROJECTFood Technology Development Center

1. Food self-sufficiency is one of Indonesia's national objectives, but the efforts to increase food production have not yet matched the food demand resulting from both income and population growth. The problem is intensified by food wastage, estimates of which range up to 25 percent, and by the constraint on arable land, especially on Java. While increasing food production is the role of agricultural programs, the responsibility of food technology is to optimize food utilization and nutritional value of a given level of agricultural production. The introduction of food technology geared at preserving perishables, reducing food wastage during storage, processing, marketing and improving the nutritional quality of foods would have a beneficial impact on food utilization and on nutritional quality of food.

2. Over 80 percent of the population of Indonesia live in the rural areas dispersed in about 60,000 villages. In the current development plan, emphasis is given to rural development programs. The application of food technology in the rural areas should concentrate on methods which use local resources and require very low cost equipment. Modern food technology would have to be adapted in scale and in sophistication to the Indonesia context and this is presently constrained by the shortage of professional staff and adequate facilities.

Present Status of Training, Research and Development in Food Technology

3. Research activity in food science and food technology which is currently in progress is limited in Indonesia. The centers of research in this field are primarily:

- (a) The Chemical Research Institute of the Department of Industry at Bogor, whose functions include service to agriculturally based processing industries. The only ongoing investigation of direct relevance to the project is concerned with the fermentation of soybeans.
- (b) The Gajah Mada University at Yogyakarta, where problems relating to processing of food cash crops and to the utilization of food waste products are being studied. On a limited scale, attempts are being made to identify problems in rural communities.
- (c) The Faculty of Agricultural Mechanization and Produce Technology at the Agricultural University, Bogor (IPB) is undertaking the following investigations:
  - (i) evaluation of small scale rice milling equipment;

- (ii) production of jam from local fruits;
- (iii) production of vinegar from coconut milk and fruit juices;
- (iv) improvement in the quality of smoked fish, dry salted and quick salted fish cakes;
- (v) egg preservation using traditional preservatives;
- (vi) chemical and mechanical methods for decorticating beans;
- (vii) extraction of oil from soybeans, groundnuts, kapok and sunflower seeds; and
- (viii) development of bottled soybean-based drinks, soybean curd and soybean paste.

These are all small-scale pilot studies. Further research as well as additional laboratory equipment, pilot plant, and research staff would be required to arrive at practical solutions for implementation in rural areas or by the food industry.

- (d) The Center for Research and Development of Nutrition, Bogor, is carrying out studies on the production of a weaning food based on soybeans, cereals and legumes and studies on the production of tempeh, a local product derived from soybean fermentation.
- (e) The Institute of Technology, Bandung, is investigating the production of weaning foods based on soybeans, using small-scale extruder equipment.

4. At none of the centers discussed above are the facilities, the range of equipment and current staff sufficiently oriented to develop practical solutions for problems of food technology, nor is there coordination of research work. Since 1970, IPB has produced 51 graduates specializing in food technology; Gajah Mada has been training approximately 30 students per year. At both centers the facilities for practical training in food technology are still inadequate and training is geared toward industrial processing of cash crops, with little emphasis on improving the nutritional value of food.

5. The Government's Agricultural Research and Extension Project, supported by a Bank Loan, includes aspects of food technology relating to rice, fruits and vegetables. The focus of this project relates to the production and marketing of commercial crops, but the results of the project could have great impact on the quality and quantity of food available for consumption. The proposed FTDC component, oriented towards nutritional benefits through the application of food technology, would be complementary to the Government's Agricultural Research and Extension Project. There would be subjects of

mutual interest such as rice milling, which would require collaboration to avoid duplication. The pilot plant of the FTDC should be able to provide facilities for testing techniques developed in agricultural research and other institutions for industrial applications.

#### Component Description and Objectives

6. The general objective of the proposed food technology component is to build up an institution in order to mobilize scientific and technical knowledge from international as well as domestic institutions to improve the use of food resources, particularly in rural areas. A Food Technology Development Center at Bogor, associated with the Agricultural University, would be established and staffed through the proposed component. It is anticipated that the Center would become the focal point of food technology research. The proposed component provides research laboratories, a library and facilities including food processing equipment, experimental rural food storage and processing units, and pilot plants to demonstrate food processing. The project would also finance the establishment of a 10 man extension unit in the FTDC.

7. The Center's primary emphasis would be on improving the level of applied technology and ensuring its transfer to food industries and agriculture. The Center's work would focus on reducing food losses in processing and storage as well as on developing improved methods of processing staple foods in order to raise nutritive values and on exploring opportunities for food fortification. Additional research and development work would be geared towards reducing food losses through packaging, standardization and quality control, storage trials, new product development, and handling and transportation of foods from farms to markets. The specific functions of FTDC would be:

- (a) to act as the focal point for the provision of information and advice on food technology;
- (b) to provide training for food technologists and extensionists both for simple rural and large scale industrial requirements;
- (c) to identify problems and opportunities associated with food preservation and processing and to initiate studies for their solution;
- (d) to collaborate with CRDN, NIPP, the Nutrition Academy, agricultural research and extension agencies and other institutions dealing with food and agriculture; and
- (e) to advise the Government on matters pertaining to food and nutrition legislation (i.e. storage, processing, distribution and quality control).

8. While the CRDN would be responsible for the nutritional evaluation of existing foods and would develop new foods on a laboratory scale, the FTDC would be responsible for developing the necessary processing methods both for small-scale, rural and industrial entities.

9. In Indonesia, with its wide variety of cultures, food storage and preparation methods differ considerably from region to region. These methods should be appraised for their effectiveness to determine what methods could be feasible for wider application.

10. The production of food supplements for remedial feeding in NIPP areas would be undertaken locally but their quality would be monitored by the FTDC. Field staff in the NIPP areas would inform the FTDC of any problems relating to transport, storage, processing, preparation, preservation, marketing and quality control of foods. FTDC's extension staff would investigate these problems, work out solutions in simulated rural conditions at the Center, and then transfer this knowledge to the field.

#### Research Program

11. The proposed research program (detailed in Appendix 1), which the appraisal mission reviewed and found satisfactory, would be concerned primarily with methods to improve the utilization of food in the rural areas. In addition, it would also focus on work relating to the food manufacturing industry. The main research focus would be on:

- (a) Assessing traditional processing and storage technology to form the basis for developing and testing more efficient methods to reduce wastage in storage and processing and thereby increase availability of food products. Evaluation for technical and cost effectiveness would precede the development of a national storage program (see para. 3.25-3.26).
- (b) Developing efficient means of rice drying methods to prevent deterioration during storage and of packing methods to minimize transport and storage losses.
- (c) Improving food processing with a view to increase the nutritive value and yield of processed products. (For example, it would explore rice parboiling presently not practiced in Indonesia. Parboiling would reduce the vitamin losses which occur when rice is polished, improve its value as a source of protein both in quantity and quality and prolong its storage life.)
- (d) Assessing opportunities for food fortification; preservation of perishable crops; increasing the nutritional value of processed foods; utilization of waste products such as rice bran; the processing of foods for urban markets and for export; and methods of quality control.

12. Following the initial laboratory studies of the various food technology problems, experimental designs of equipment would be developed and tested on a larger scale in the experimental rural food processing units of the FTDC. Satisfactory prototypes would subsequently be tested in the rural areas by members of the Center's extension service.

#### The Extension Services

13. The FTDC would have a pilot extension unit of ten staff members who would be associated with the Agricultural University of Bogor (IPB) extension service. The members of the unit would collect information from the diverse cultural regions of Indonesia on traditional methods for storage, preservation, processing and preparation of foods and would identify associated problems. Both FTDC and CRDN would systematically analyse this information in order to select methods suitable for general application and to solve the problems of storage and processing identified by the extension staff. Simultaneously, the centers would select technical improvements, drawing as much as possible on existing know how from both developing and developed countries. Recommended technical improvements, having been verified in the prototype units at FTDC, would be tested in selected villages by the extension staff. Methods demonstrated to be suitable would be made known to the agricultural extension service and other organizations involved in rural development.

14. The FTDC extension staff would assist the Nutrition Intervention Pilot Project (NIPP) to set up production units in rural areas in order to provide sufficient quantities of foods suitable for supplementary feeding. In addition, the unit would assist small and medium scale food industries, in both urban and rural areas, to increase the efficiency of their operation and improve the quality of their products.

15. FTDC would prepare reports on the successful application of food technology in the rural areas. These reports would be distributed to those concerned with rural development in Indonesia and would be included in the curricula of courses in food technology, nutrition, agricultural extension and rural development.

#### Training Responsibilities

16. The staff of the FTDC will also serve as faculty members of IPB with teaching responsibilities. Both the research and food processing laboratories of the FTDC would be used for practical training in conjunction with B.S. and M.S. programs in food technology offered at IPB. Ph.D. candidates would also have access to these facilities.

17. Also, the Center would offer short courses for: personnel in the rural food industry and food industry technicians; teachers from technical institutions and vocational colleges; agricultural extension officers; and nutritionists.

18. To ensure adequate training in food technology, laboratory equipment for the science laboratories of IPB would be provided.

#### Organization and Management

19. The Director of the FTDC would be responsible for the administration of the Center, for the direction of the research and development programs and for the extension activities. Overall budgetary control of the Center would be the responsibility of the Rector of IPB, who would be assisted by the IPB Director of Administration and Finance.

#### Staffing

20. The Director of the Center, an Indonesian food technologist of sufficient stature and administrative ability, would be appointed immediately after project effectiveness. A section head for food processing would be appointed beginning with the second project year to assist in the installation of the processing equipment. The Technical and Procurement Officer, the Processing Plant Manager and the Chief Librarian will also be appointed at that time.

21. At present there are six Ph.D. candidates studying food science or technology abroad. They have been sponsored by IPB and USAID and are due to return in 1978. IPB has agreed that three of them will join the Center.

22. By 1978, M.S. graduates in food technology, under ongoing government programs, would be available for the posts of Research Officers and Senior Extension Officers. Research Assistants and Extension Officers would be recruited from the current B.S. candidates at IPB and Gajah Mada. Technical Officers and Technicians would be recruited from engineering graduates from the Bandung Institute of Technology.

23. In all, there would be 23 senior positions and 50 junior positions by the end of the fourth year (see Appendix 2, Table 1).

#### Staff Development

24. The project provides 28 fellowships to candidates for the position of research assistant and extension officer and 7 fellowships to those working towards an M.S. degree at IPB (see Appendix 3, Table 1 and 2).

25. The project would also finance in-service training in the use of food processing equipment for B.S. and M.S. candidates. Eighteen man-years of long-term fellowships abroad are provided to give the faculty adequate training in modern food technology work.

26. To gain specialized knowledge in the fields of food storage and general food technology, three M.S. candidates would need training abroad. Fellowships also include provision for specialized Ph.D. training abroad in

food engineering, food biochemistry and nutrition, quality control and food microbiology and hygiene. Phasing of training abroad is given in Appendix 3.

27. Short-term training and visits abroad for Center staff are also provided under the project. The Director would have a period of two months of training in administration at a center abroad and would have a total period of three months visiting food research and training centers. The processing plant manager and research officers who receive M.S. training in Indonesia would visit food research and information centers in South and Southeast Asia.

#### Technical Assistance

28. The project provides for about 96 man-months of short-term technical assistance to help establish the facilities of the Center and to assist with the program of work. Terms of reference for these specialists are given in Appendix 4.

#### Physical Facilities

29. The buildings of the FTDC would be located on the campus of the Agricultural University at Bogor. They would consist of two blocks, one for research laboratories, the library, lecture and seminar rooms, and one for food processing equipment and facilities for an experimental food processing pilot plant. The experimental rural food storage and processing units would be located adjacent to these facilities.

30. With a view to improving the training in the science subjects essential to food technology, laboratory equipment for the science laboratories at IPB would be provided from project funds.

#### Costs

31. The total base costs of the component would be US\$5,525,000 of which 56 percent would involve foreign exchange. Details of civil works are given in Annex 10 and an analysis of the total costs in Annex 11. Costs of training and consultants/advisors are given in Appendix 3.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Food Technology Development Center

Research Studies

Prevention of Losses During Storage

1. Drying - In many areas of the country crop drying is a problem because of the high relative humidity and frequent rainfall. Sun driers would be designed and tested to meet the conditions encountered in the different regions of Indonesia. Supplementary air drying methods would be studied.
2. Storage - The general specifications for buildings to minimize losses during storage are well known. Investigations are needed to find ways of meeting these general specifications using, wherever possible, local materials and methods of construction. Experimental designs would be evaluated on the site of the FTDC and successful prototypes tested in rural areas.

Processing of Foods for Local Needs

3. Preservation of Perishable Crops for Out of Season Use - Drying is the simplest and most effective method of food preservation. Methods of preserving and retaining the vitamins in Indonesia food crops would be studied, not neglecting traditional methods such as salting, smoking and fermentation.
4. Increasing the Nutritional Value of Harvested Crops - In collaboration with the CRDN, the main aspects studied would be, in collaboration with the CRDN, on methods of producing quantities of optimum protein mixtures made up of the locally available cereals and legumes in a given region. Model production units designed to ensure efficiency of manufacture, together with high standards of hygiene, would be developed and tested in the FTDC site before field trials. Parboiling of rice is an important process for study since it reduces the losses of protein and vitamins which occur when rice is polished. The milling ratio and quality of grain is also increased by the process. Unfortunately the standard parboiling process gives a product not readily acceptable to most Indonesians. The development of acceptable food products from parboiled rice would produce considerable nutritional benefit to both urban and rural populations.

Processing of Foods for Transfer From Rural to Urban Areas

5. The processing of produce gains increasing importance in order to retain their nutritional value and produce a more stable food product for

marketing in urban areas. The production of cereal/legume protein weaning food mixtures is one such example. In addition to improving the nutritional value of the diet in urban areas, the setting up of small manufacturing units in the rural areas would increase the monetary value of the marketed products - inter alia increase rural incomes - and reduce transport and storage costs since the bulk of processed food is less than that of the raw materials.

#### Processing of Food Crops for Export from Indonesia

6. There are a number of cash crops such as coffee, tea and spices which do not have nutritional significance but are valuable export commodities. Processing technology associated with these commodities is well advanced and research is continually being undertaken at various international centers throughout the world. Therefore, the Center should devote only a limited amount of research on these commodities.

#### Quality Control

7. In the preparation of all food products, it is essential that tests should be made during the processing stage and particularly of the final product to ensure that:

- (a) nutritional standards are maintained;
- (b) no harmful substances are present;
- (c) standards of hygiene are maintained and the product is free from contamination by harmful micro-organisms which would cause rapid deterioration during storage; and
- (d) the product is of the required standard regarding flavor, color and appearance. Standard methods of quality control will need to be applied to all manufacturing processes and may need to be adapted to Indonesian food and conditions. Advice on quality control aspects will be given to the larger manufacturing units who will, however, have their own staff and facilities for maintaining control.

8. The small processing units sited in the rural areas will have neither the facilities nor the staff to maintain quality standards. Therefore, the FTDC will need to monitor these rural food processing units. In addition to the more comprehensive quality control tests, to be carried out periodically on samples of products from rural processing units, new rapid screening tests will need to be developed which can be carried out in the field to ensure that the output is safe to eat. This system of testing is particularly important in the case of the production of weaning foods since children are more susceptible to harmful micro-organisms in foods.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Food Technology Development Center

Staff List at Full Development in Year 4

	<u>Professional</u>	<u>Senior Technical</u>	<u>Junior Technical</u>	<u>Clerical and General</u>	<u>Others</u>
<u>Administration</u>					
Director	1				
Executive Secretary	1			6	
Finance Officer	1				
General Manager	1			4	6
<u>Technical Services</u>					
Technical Officers	1	2	10		
Processing Plant Manager	1				4
Librarian	1		2		
<u>Sections</u>					
Microbiology		1			
Biochemistry		1			
Quality Control		1	12		
Food Processing		1			
Research Officers		6			
<u>Extension Services</u>					
	1	3	6		
Sub-Total	8	15	30	10	10
<u>Agricultural University, Bogor, Administration</u>					
		2	2	2	
TOTAL	8	17	32	12	10

INDONESIA NUTRITION DEVELOPMENT PROJECT

Food Technology Development Center

Schedule of Establishment Costs (Constant 1976 US\$'000)

	<u>Yr. 1</u>	<u>Yr. 2</u>	<u>Yr. 3</u>	<u>Yr. 4</u>
<u>FTDC</u>				
Strength of Establishment of which	11	20	59	79
Senior Staff	6	10	23	25
Support Staff	5	10	36	54
Total Establishment Cost	25	46	133	176

INDONESIA NUTRITION DEVELOPMENT PROJECT

Food Technology Development Center

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Phasing of Technical Assistance

	<u>Number of Man-Months</u>			
	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
1. <u>Consultant/Advisors</u>				
Program Advisor (2 years)		6	12	6
Research Specialists (6 months ea.)	6	6	12	12
Research Specialists (3 months ea.)	6	6	12	12
TOTAL	12	18	36	30

	<u>Number of Fellowships</u>			
	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
2. <u>Fellowships</u>				
Shortterm fellowships	2	2	1	-
M.Sc. Abroad - Starting	2	1	-	-
- Ongoing	2	3	1	-
Ph.D. Abroad - Starting	2	2	-	-
- Ongoing	2	4	4	2
B.Sc. in Indonesia - Starting	28	-	-	-
- Ongoing	28	26	20	12
M. Sc. in Indonesia- Starting	3	2	2	-
- Ongoing	3	5	4	2

1/ Based on tentative estimates made by the Appraisal Mission.

INDONESIA NUTRITION DEVELOPMENT

Food Technology Development Center

Cost of the Technical Assistance Program

Technical Assistance

	<u>Number</u>	<u>Unit Cost (Constant 1976 US\$)</u>	<u>Total Cost</u>
(a) <u>Consultants/Advisors</u>			
Program Advisor/Specialist for 2 years	1	70,000	140,000
Equipment Specialists for 6 months each.	6	30,000	180,000
Research Specialists for 3 months each.	12	9,500 <sup>1/</sup>	<u>114,000</u>
Sub-total (consultants)			<u>434,000</u>
(b) <u>Fellowships</u>			
<u>Fellowships short-term</u> (27 manmonths)	5	3,500	17,500
<u>Fellowships long-term</u>			
B.S. in Indonesia	28	3,250	91,000
M.S. in Indonesia	7	6,500	45,500
M.S. abroad	3	15,000	45,000
Ph.D. abroad	4	22,000	<u>88,000</u>
Sub-total			<u>287,000</u>
TOTAL			<u>721,000</u>

<sup>1/</sup> Annual cost of US\$16,000 for expatriates and US\$4,000 for local consultants.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Food Technology Development Center

Terms of Reference for Research Program Advisors/Specialists

1. The Food Technology Development Center to be supported under the project would require the services of a research program advisor and research specialists to assist Indonesian scientists in establishing and implementing an effective work program. These specialists/advisors would be recruited directly or through international or bilateral assistance, under terms and conditions acceptable to the Bank with the following terms of reference.

Program Advisor

2. An experienced food technologist with administrative competence and with awareness of food technology to improve nutrition in a rural setting, will be required to advise the FTDC. He would have established and/or managed a food technology center with a nutritional emphasis in a developing country and with a bias towards solution of rural agricultural problems.
3. The Program Advisor would:
- (a) cooperate with the Director of the Food Technology Development Center and his colleagues in formulating, designing and supervising research and action projects for improvement of food processing for storage;
  - (b) assist the Director in developing and implementing a pilot village storage program;
  - (c) assist the Director in the selection of heads of divisions and research specialists for the Center;
  - (d) assist the Center in the selection and placement overseas of professional personnel for fellowship training for graduate degree or study; and
  - (e) assist the Director in the selection of equipment to be procured under the project and in the completion of the proposed civil works.

Research Specialists

4. Specialists are expected to be needed in the fields of storage, drying processing, packaging, quality control, processing equipment, rice

processing, food preservation marketing and library services. They are to be engaged for periods ranging from 3 to 6 months.

Each specialist would:

- (a) assist the staff of the Center to develop the program of work in the area of his specialisation;
- (b) arrange on-the-job training for local staff; and
- (c) develop manuals, where necessary, for future guidance of the FTDC staff.

5. The specific qualifications desirable for specialists in the respective areas of interest to FTDC are listed below.

<u>Category of Operation</u>	<u>Experience Desirable</u>
1. Storage	Knowledge and experience in research and construction of food stores, methods of pest control, latest techniques of reduction of storage losses in village conditions. At least 3 years experience essential.
2. Packaging	Research in methods of packaging suitable to tropical village conditions. 3 to 5 years experience in field application of results of research desirable.
3. Quality Control	Experience for 3 to 5 years in monitoring the quality of output of small-scale food conditions, particularly of protein foods for child feeding.
4. Rice Processing	Research in improved methods of rice processing including milling, the nutritional consequences of different methods, their costs and other economic impact. At least 3 years experience desirable. Person with actual field experience in extension of improved rice processing techniques preferable.

<u>Category of Operation</u>	<u>Experience Desirable</u>
5. Food Preservation	Research and extension in methods of preservation of perishable foods, particularly fruits, vegetables and fish in tropical climates. Experience of 5 years desirable.
6. Laboratory Equipment	Experience of 5 years in a food technology laboratory, preferably in a developing country. He has to assist in the selection of items of laboratory equipment. Experience in preparation and completion of procurement documents for internationally aided projects would be a desirable qualification. 5 years of experience in receipt and installation of modern equipment and in ensuring arrangements for satisfactory maintenance of equipment is essential.
7. Pilot Plant Equipment	An experienced engineer with knowledge of pilot plants used in a Food Technology Institute or in a Food Research Center. Should have experience in procurement, installation, operation and maintenance of equipment in food technology labs or food processing laboratories.
8. Library Services	Experience for 5 years in library management in a well-equipped food science and technology laboratory. Should be able to set up a system of procurement of books and journals, classification and library stock control.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Nutrition Intervention Pilot Project

1. The Applied Nutrition Program (ANP) operated from the early 1960s as the main intervention measure to combat malnutrition. In 1973, an evaluation study of ANP indicated that the program concentrated too heavily on only one aspect of nutrition -- the production and consumption of protein-rich foods. It failed to provide for effective diffusion of nutrition information and practices beyond the individual innovators and demonstration villages. The program also failed to establish target population groups. While the Nutrition Intervention Pilot Project (NIPP) would build on the awareness created by ANP, it would be specifically directed at the nutritionally most vulnerable population in rural areas.

2. The proposed component was prepared by a Task Force of BAPPENAS with the assistance of Bank staff and consultants and with close involvement of all regional and local authorities concerned. In designing the contemplated comprehensive nutrition activities of NIPP, the success and shortcomings of the ANP experience have been taken fully into account. 1/ The proposed activities combine supplemental feeding with associated health, education and agricultural measures.

3. The NIPP component would develop effective measures which would bring about improvement in the nutritional status of target populations. Priority would be given to tackling the problem of PCM, after identifying those in need of assistance, through (i) the provision of locally produced supplementary food where required; (ii) the control of closely related diseases through immunization and health care and (iii) a nutrition education

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- 1/ The main differences between the proposed NIPP and ANP would be:
- (a) size of administrative unit covered -- NIPP administrative unit would be a Kabupaten with a population ranging between one half and one million, whereas ANP focussed on individual villages;
  - (b) NIPP emphasis is on both calorie and protein deficiencies -- ANP tended to focus attention on production of protective and protein-rich foods;
  - (c) NIPP nutrition education emphasis is on bringing about behavioral change rather than on learning about various food groups;
  - (d) supportive health activities proposed in NIPP have not been available in ANP;
  - (e) NIPP food supplementation for malnourished children below the age of three, pregnant and lactating women;
  - (f) proposed baseline survey of nutritional status in NIPP was not a feature of ANP and handicapped evaluation of ANP; and
  - (g) attempt to focus NIPP action on the nutritionally needy, particularly those in the low-income sector.

campaign. The locally produced supplementary foods will be delivered through alternative systems such as health, village officials and volunteers. There would be integrated actions with extension services to stimulate increased food production for home consumption, reduction in food wastage, better utilization of available food through nutrition education and encouragement of other income-earning activities.

Program Objectives

4. NIPP has both nutritional and managerial objectives. Nutritional objectives are:

- (a) to reduce morbidity and mortality resulting from protein-calorie malnutrition (PCM), particularly among young children; and
- (b) to reduce the incidence of iodine and iron deficiencies.

Among the means adopted to achieve these objectives would be:

- (a) improvement of food habits and related behavior through nutrition education;
- (b) increase in food production, particularly in home gardens;
- (c) improvement of food processing and storage to prevent wastage of food and nutrients;
- (d) immunization; and
- (e) water supply and health insurance scheme in selected villages.

The managerial objectives are:

- (a) to demonstrate the feasibility and replicability on a national scale of specific nutrition activities to improve nutritional status based on principles of community self-help;
- (b) to develop a system or systems for delivery of food supplements;
- (c) to study the feasibility of administering a multi-disciplinary project within the normal machinery of Government; and
- (d) to develop means of measuring the effectiveness of activities aimed at improving nutritional status.

5. The NIPP component would improve the nutritional status of children under the age of three, pregnant women and lactating mothers in about 180 villages distributed in 7 Kabupatens. The component would finance: the

nutrition education of about 100,000 families; the immunization of 100,000 children against infectious diseases; supplementary feeding of 30,000 potentially severe and moderately malnourished children under the age of 3, pregnant and lactating women; salaries of staff to train village volunteers (village cadres) and supervise them; evaluation of the effectiveness of the combined package of these measures and technical assistance to plan and implement these activities. This component would also benefit from programs for establishing home/village gardens in these villages and improvement of storage and processing (see paras 27 to 40).

#### Base-Line Data

6. A sample survey of baseline data would be carried out by the Center for Research and Development (CRDN) during the preliminary phase of operations in all NIPP areas so that the achievements of the program could be measured in light of the above stated objectives. Anthropometric measurements (weight, height, arm circumference) <sup>1/</sup> and clinical examination for anemia would be used as indicators of improvement in nutritional status. CRDN would be responsible for collecting, analyzing and interpreting the data.

#### Choice of Project Areas

7. The Government decided that NIPP should begin in the Kabupatens of Bojonegoro in the Province of East Java and in West Lombok in the Province of Nusa Tenggara Barat. In selecting the Kabupatens in these provinces the following criteria were adopted: the presence of a malnutrition problem; administrative support; likely positive response from the people; an area typical of Indonesian conditions; and where the Applied Nutrition Program has been functioning.

8. The NIPP would be carried out in the two Kabupatens initially, extending to two additional Kabupatens in the second year. Subject to a review by the Government and the Bank, it will be extended to three additional Kabupatens in the last two years of the project. In the second year, Kabupatens would be selected in Central Java and South Sumatra and, subject to the review, selection in West Java, Yogyakarta and Bali would take place for the third year.

9. In the Kabupatens of Bojonegoro and West Lombok, the initial three sub-districts selected in each are within easy reach of Kabupaten headquarters so as to facilitate close supervision during the first operational year. Most of the villages chosen in these sub-districts are aware of the need for nutritional improvements from previous ANP activities. The sub-districts selected for the second year of operations would be those which according

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<sup>1/</sup> In recent years, emphasis has been given to anthropometric measurements that are truly age-independent, provided the children can be broadly grouped as of, say, pre-school age. Measurements of arm circumference/height, weight/height are found to be highly correlated to malnutrition in young children, as judged by a low-weight/age ratio or by the presence of clinical signs.

to the base-line data surveys, have the most widespread nutritional problems in the Kabupaten.

The Initial NIPP Areas

10. The Bojonegoro Kabupaten is situated in the northwest of the province of East Java. It can be divided into three main areas according to the food availability: in 55 percent of the area, food production is in surplus; in 25 percent of the area, production is just adequate; whereas in the remaining area, it is in deficit. The total population in 1974 was about 876,000, of whom 76,000 lived in the capital Bojonegoro, a typical rural township. The rest of the Kabupaten is divided into 19 sub-districts and just over 400 villages. The village population is about 2,000 on average which is below the normal for Java. The total area is 2,375 sq. km., giving a population density of about 370 per sq. km. The total area devoted to agriculture is about 104,000 ha and the majority of farmers have holdings under 0.5 ha. The annual gross calories and protein values of agricultural production in Bojonegoro were calculated to yield 1,964 calories and 39.9 g protein per capita a day. There are 18 polyclinics, 32 health centers and 31 sub-clinics, with 7 medical officers, 84 paramedical staff and 51 midwives. Average daily attendance at the polyclinics is 293, at the health centers 161 and at the sub-clinics only 14.

11. For the first year of operations the following sub-districts and villages have been selected:

<u>Sub-District</u>	<u>Village</u>
Sumberrejo	Sumberrejo Prayungan Tlogoaji
Dander	Dander Ngumut Mojoranu
Kalitidu	Ngujo Pumpungari Leran

12. Sumberrejo and Dander have health clinics, all others have MCH centers except Ngumut, which has one nearby. Sumberrejo and Dander have also been selected as sub-districts for the INPRES for Community Development. All villages have schools and some are covered by the Government's programs for water supplies and provision of latrines. In each sub-district there is a grain cooperative (BUUD). Supplementary feeding and the local processing of supplementary food would be carried out at the BUUD depots.

13. Lombok is the western island of the province of Nusa Tenggara Barat and it is divided into three Kabupatens. West Lombok Kabupaten, which includes the provincial capital Materam, has been selected as an area for the proposed NIPP component. The area of West Lombok is 1,728 sq. km., with a population of about 556,000 in 1974 and 310 persons per sq. km. The total area under cultivation in 1974 was around 96,000 ha. It is divided into 9 sub-districts and 83 villages. The villages vary in size from nearly 16,000 to just under 2,000 population. On average, the village population is about 6,500 or double that of Java. The gross calorie and protein values of agricultural production on West Lombok were calculated to yield 1,690 calories and 31.6 g of protein per capita per day. In eight of the nine sub-districts there are polyclinics, three of which have a doctor in charge. In addition there are 23 sub-clinics. The attendance at all the 31 health outlets is about 9,000 per month, about 10 patients per clinic per day.

14. The following sub-districts and villages have been selected for the first operational year:

<u>Sub-District</u>	<u>Village</u>
Narmada	Bt. Kumbung Selat Sembung
Cakranegara	Telagawaru Sayang-2 Kekeri
Ampenan	Gunungsari Meninting Kekait

Each of these villages has a school and most have health facilities.

#### Phasing of NIPP

15. In each NIPP area activities undertaken in the first year would include: procurement of vehicles and equipment; selection and training of NPO and ANPO and Training Officers; collection, analysis and interpretation of baseline data; formulation, testing and production of one or more food supplements; design of a nutrition education campaign and preparation of teaching aids; training of VANPO, village cadres and food supplement production staff; familiarizing officials, and potential beneficiaries with the project objectives; and development of a plan of operations. Appendix 5 represents preliminary activities and their phasing.

16. The second year would be the initial year for operational activities in each selected Kabupaten. Activities would take place in three villages in each of three sub-districts of the Kabupaten. In the third year, operations would be extended to three more villages in each of these sub-districts and three villages in three additional sub-districts. Appendix 6 shows the project implementation schedule.

17. The base-line survey would provide the basis for preparing the plan of operations for each Kabupaten. The plan would reflect decisions relating to the specific activities to be undertaken in each village, how and when they would be carried out and who would be responsible for each activity. These plans of operation would be ready well before the first operational year in each NIPP Kabupaten.

#### Food Supplementation

18. Free food supplementation would be arranged for children with existing and/or potential signs of moderate/severe PCM (indicated by anthropometric measures) and for malnourished, pregnant and lactating mothers. The eligibility of mothers for food supplementation would be on the basis of agreed criteria, chief among them would be low family income levels. The food supplementation would also be a teaching aid for nutrition education emphasizing the importance of adequate feeding, since in the long-run the teaching of better feeding is far more important than the curative aspect of supplementary feeding programs.

19. The food supplements, consisting of a cereal and legume mixture, would make use of locally available materials and would be processed at the sub-district level. Selection would be made from the various supplements already developed by the CRDN, including the simple processing and blending techniques suitable for local use.

20. Raw materials would be purchased and stored by the local cooperatives (BUUD/KUD) and processing would be carried out at cooperative depots which would be available in each sub-district. After processing, the food would be packed in plastic bags with capacities of either a one-week supply for a child or a one-week supply for a mother. The village distribution point would hold up to one month's supply of food. Distribution of the weekly food supplements would be made against vouchers presented by the beneficiaries. Replenishment of the month's supply of food at the distribution point would be made against vouchers collected from the beneficiaries. The FTDC would be responsible for monitoring the quality of the food supplement and the Provincial NIPP Audit Unit would check production and delivery of the supplements (see Appendix 1).

#### Health Services

21. Existing health services aimed at controlling infectious and parasitic diseases and at educating the population in personal and environmental hygiene would be intensified in NIPP areas. Special provision would be made in all NIPP villages for treating diarrhea and for immunization of children

against the common infectious diseases 1/ of smallpox, tuberculosis, diphtheria, whooping cough, and tetanus. Over 100,000 children are expected to be immunized as a result of the project.

22. A Presidential Instruction has made provision for improved water supplies and for family latrines. Within the NIPP component there is financial provision for strengthening ongoing government programs for rural water supply in seven selected villages by providing one pumpset for 25 houses.

23. In a few selected villages, health services under NIPP would include promotion of village health improvement schemes, based on monthly premium payments by families into a joint community fund. Successful models have been developed in the Solo area of Central Java and in Kampung of Jakarta. Each family pays a small monthly sum to a community fund; such payments vary according to the means of the family. The fund is administered by a committee appointed by the community. When there is sickness in a member's family, the patient reports to the health center for treatment; the normal fees are charged to and paid by the community fund. In some cases the community has used the fund for local commercial loans and the interest earned has been often sufficient to meet the health costs on a self-sustaining basis.

24. It is expected when NIPP becomes a national program the costs of selective food supplementation and immunization in a typical village (population 3,000) would be around US\$700 annually, amounting to annual per capita costs of US\$0.23. The Government expects that local communities would ultimately share in the costs of food supplement. Ultimate annual recurrent costs of NIPP for a typical village with a population of 3,000 would be:

A. Cost of Food Supplementation

	Total Beneficiaries	Number Ultimately Supplemented	Units Costs US\$	Total Costs Per Annum US\$
Children under 3	337	19	4.2	80
Pregnant women	137	27	6.3	170
Lactating mothers	120	25	10.7	268
Sub-Total				518

B. Cost of Immunization

Sub-Total (A +B) 638

C. Overheads @ 10 percent

Total ultimate recurrent costs 702

Cost per capita US\$ 0.23

1/ Measles is recognized to be prevalent, but because of cost considerations immunization is not proposed in the project.

Nutrition Education

25. Using primarily female village cadres as the principal teaching agents, special attention would be given to mothers of malnourished children who would receive nutrition information along with food supplementation for their children. Nutrition education material would be produced and tested for use on a national scale. The material adapted to the nutritional conditions of each village would convey initially four main messages: (a) the promotion and maintenance of breast feeding; (b) the use of supplementary and more nutritious homemade weaning foods; (c) the use of locally available, cheap foods to supplement the cereal-based diet; and (d) the impact of adequate nutrition on child development. The program would also emphasize hygienic food handling and the special feeding of children with diarrhea and other diseases. The detailed content and methodology for nutrition education would be determined on the basis of the recommendations made by the nutrition education consultant, who would be engaged during the first year of the project. Each village nutrition center would hold two practical demonstrations each week of preparing and cooking food supplements and locally available foods. Provision has been made for the purchase of raw materials. The prepared and cooked food would be distributed to the families of those attending the demonstration.

26. The nutrition education model being developed under another component of the project (see Annex 5) would be tested in the Kabupaten selected for NIPP in Central Java in the second operational year. A comparison would be made of the effectiveness of this model (which depends upon a series of workshops, meetings and seminars at various administrative levels) with and without collaboration with other NIPP activities. Each Kabupaten selected for NIPP would be provided with communication equipment for use in motivation of key personnel, training of staff and for nutrition education.

Action Program for Improved Home and Village-Gardens

27. BIMAS has a vegetable production program covering 20,000 ha in the Province of East Java, including 2,000 ha allocated for Bojonegoro. This program is aimed at vegetable production for the commercial market and not for home consumption. The Government of Indonesia proposes that the home-garden sub-component in the NIPP areas should be separate from the BIMAS program.

28. The Agricultural University, Bogor (IPB), in co-operation with the Ministry of Agriculture, is currently developing a model home-garden package, on the basis of what is nutritionally desirable and acceptable to the local population, horticulturally feasible and economically justifiable. A survey is being undertaken of fruits, vegetables, legumes and tubers which can provide a well-balanced supply of vitamins and minerals. Basic management and cultivation methods for home gardens will be developed, and an instruction manual and a training curriculum for home-garden extension workers will be prepared. The lack of improved vegetable seeds and agriculture extension staff trained in horticulture constitutes a severe

constraint to production. This component would provide salaries for 10 agricultural extension staff, seeds, fertilizer and other production oriented services. The annual costs for this program per farm family are expected to be in the order of US\$4.5.

29. In the province of East Java the land occupied by homeyards amounts to 17.4 percent of the total agricultural land. The greatest constraint for its productive use would be water supplies and, although much of the homeyard land could not be used for the production of vegetables and fruits, a marked increase should be possible and action, based on the home-garden package, would be stimulated in NIPP villages.

30. In order to establish the necessary demonstration effect, the program would be provided, for a 3 year period, on a grant basis. Prior to project completion, the Government and the Bank would review the results and, in light of their findings, determine whether this sub-component should be converted to a credit program to be administered under BIMAS. A total of 18,000 farmers in the NIPP villages would receive an initial supply of seeds and other inputs needed for home-gardens. In addition, community efforts would be mobilized through the Lurah and village nutrition cadres in setting up village gardens - for each village - on communally owned land. One extension worker would be available to about 1,800 farm families within his area, but he would focus his efforts on groups of 10-15 progressive farmers, headed by a control farmer. Each progressive farmer in turn would transmit the advice received from the extension worker to a group of 7-10 neighboring farmers. Each extension worker would be assigned to 16 farmer groups, visiting each group once a fortnight on a fixed day and time. He would motivate farmers to rapidly adopt improved methods so that their gardens would serve as models to their neighbors. A part of the output of these gardens would be marketed locally or purchased by NIPP management to be used for food supplementation of the nutritionally vulnerable groups. At the time of full project implementation the additional production of vegetables from these home/village gardens would reach a value of about US\$500,000 annually.

31. The training of 10 new agricultural extension workers for the promotion of home-gardens would be undertaken during the first year of the project. By the beginning of the first operational year, supplies of seeds and cuttings, fertilizer and insecticides would be available and promotion of home-gardens would become an integral part of the NIPP activities right from their commencement. In addition to tested seed varieties available in Indonesia, the required vegetable seed would be imported under the proposed project (from institutes such as the Asia Vegetable Research and Development Center in Taiwan) and tested during the first project year at the Bogor Agricultural University before being used in NIPP areas. UNICEF is supporting a program to develop demonstration seed gardens that could be replicated at Kabupaten or sub-district levels. It would assist in the preparation of a curriculum for seed garden managers and of an instruction manual for management of seed gardens. The Government is discussing a possible project, financed bilaterally, for the establishment of large-scale seed production facilities.

Action Program for On-Farm and Village Level Storage

32. Information regarding village level storage of food is sparse. While there are reports that losses may be as much as 25 percent, estimates of losses are unreliable. Much of the grain crop is sold immediately after harvest; storage of grain is normally "over the stove" in the houses and would be for a short to medium period of time. Improved storage facilities would not only reduce losses, but would also enable the farmer (debt permitting) to retain the crop for sale at a higher price than at post-harvest time.

33. The proposed action within the project would include:

- (a) a study by the FTDC of storage losses under farm and village conditions;
- (b) the design of prototypes to be developed in simulated village conditions at FTDC;
- (c) the trial of selected prototypes in village conditions for technical effectiveness and response by the farmers;
- (d) the review of results by a national seminar to give recommendations on the policy and program for storage at farm and village levels; and
- (e) the training of extension workers in promotion of the recommended program.

34. The project provides financing for the establishment of small-scale storage facilities, varying in size from 1 to 10 tons and comprising a total capacity of about 300 tons.

35. The IPB Food Technology group would carry out a baseline study in the NIPP areas of the prevailing storage practices. This would include the determination of losses incurred during storage by weight, volume and nutrient content; the reaction of farmers to losses; and marketing practices. Since most of the production is presently sold at harvest, the study would find out the immediate cash requirements of farmers at harvest time to pay debts; whether damaged grain is sold with or without price differentials; and the price fluctuations during the year.

36. In designing prototypes, the group would consider whether modification of traditional methods would be more effective than the introduction of new methods. The aim would be to develop a low-cost storage facility, using local materials as far as possible, and capable of being built by local labor. The methods for testing effectiveness would be devised so as to ensure that they could provide a basis for monitoring. It is expected that FTDC will have completed both the baseline study and the prototype design at the end of the first project year.

37. The third stage would be the construction of five selected units in NIPP villages. After these units have been tested for technical effectiveness as well as evaluated on grounds of costs/benefits, additional units will be constructed in other NIPP areas. The storage would be provided to the BUUD (local village cooperative) on a loan basis according with the existing credit terms under the Food Storage Program. BUUD would also manage the storage units. Following the development of a successful design, the Ministry of Agriculture in consultation with the FTDC would prepare a storage credit program to be provided through Bank Rakyat for financing its wider adoption. Promotion of better storage methods would involve training of agricultural extension staff in the technical aspects of construction and in communication techniques to facilitate acceptance and participation by the farmers.

38. After completion of studies and trials, a seminar would be held involving those responsible both at national and local levels to formulate a policy and program for farm or village level storage. Bulk storage by BULOG and intermediate storage at BUUD/KUD depots could be affected by the storage methods used at farm or village levels. Close coordination of the total storage system would be considered by the seminar. The recommendations of the seminar, as approved by the Government of Indonesia and the Bank, would be applied in selected villages of the NIPP areas. Details of the estimated costs are given in Appendix 9.

#### Food Processing

39. Although there have been a few isolated studies, little is known about food processing and food handling in villages. In parallel with the studies and trials for village level storage, work would be undertaken on improvements in village level processing by the FTDC. In the NIPP areas, a survey would be carried out to determine the current practices of food handling, processing and preservation of the major food crops with particular attention to the nutrient content and hygienic quality of the foods at various stages. The commodities to be studied would include cereals such as rice, maize and sorghum, legumes such as soybean, mung bean and groundnuts, and root crops such as cassava and sweet potato. Attention would also be paid to dark green leafy vegetables, fruits and other vegetables.

40. It is expected that the survey would reveal many possibilities for bringing about improvements in the methods of handling, processing and preservation of foods. Short-term experiments would be carried out by the FTDC under simulated village conditions at Bogor. The results of the experiments and trials would be presented to a seminar consisting of representatives from the NIPP areas and from other components of the Nutrition Development Project. Recommendations from the seminar would be converted into teaching aids which would assist extension staff in promoting the adoption of improved methods in the NIPP areas.

### Village Operations

41. Villages are already divided into blocks of about 50 households each. Each village would have one or more simple village nutrition centers each serving approximately 600 households or 3-4,000 people. The village nutrition center would be located in a village hall, school or other building that could be suitably adapted and staffed by the village cadres. The project provides for the cost of adaptation of, or of improvements to the buildings selected and for the recruitment and training of part-time village cadres. The village cadres, mostly women, would be recruited from among home economic workers of the agricultural extension service, community development workers and members of the women's organization PKK. The village cadre would be responsible for compiling a register of all children below the age of three years, for carrying out and recording the results of monthly weighing of these children and, on the basis of lack of or low weight gain, identifying children in need of food supplement, which would be obtained from the local authority (see also Annex 9 for details of information to be gathered). The village cadre would visit the homes to demonstrate preparation of the food and to assist in the child's acceptance of the supplement and to provide information on improved nutrition practices. Such visits would be repeated until the feeding practice is established. The daily supplement would consist of 60 g of the approved cereal-legume mixture and would be provided to a child until an adequate weight gain is reached, normally a period of 45 and 90 days. Based on experience of rehabilitation centers in other countries, the expectation is that the mother would feed the child properly thereafter.

42. The monthly weighing would be used as an educational tool. Most mothers do not recognize that there is anything wrong with a child suffering from mild or moderate PCM, since that is the norm. Monthly weighing provides the opportunity to demonstrate that the child may not be doing well. Similarly, the food supplement would be used as an educational tool to demonstrate that locally available foods can bring about the desired change in well-being. Once mothers recognize the need for change in the feeding of their children, it would be expected that they adopt nutritional behavior change. However, not all would be able to do so. Perhaps about 20 percent of those who have been rehabilitated through supplementary feeding and health care may relapse and require a second period of supplementation. In addition, there would be those who would never be able to feed their children satisfactorily because of handicaps or economic circumstances. This group represents a separate social problem, which cannot be solved through this project.

43. It is proposed that initially there would be one village cadre per 50 households. After a year's activity, it is believed that the intensity of supervision may be reduced to one village cadre per 100 households. Thereafter the numbers could be reduced further, but as the cadres receive no

honoraria, the number maintained does not affect the cost of continuation. The provision of uniforms, certificates and inter-village competitions would be used as incentives for village cadres.

44. Pregnant women represent a different problem. Although many are affected by PCM, the most prevalent problem is nutritional anemia. In diets lacking in animal protein, it would be unlikely that pregnant women would be able to acquire sufficient iron from their normal diet. Every effort would be made to encourage pregnant women to make use of the existing MCH services, where iron tablets, provided by UNICEF, are readily available. The most economically deprived section of the community may require supplementary feeding. Provision has been made to supply food supplements to pregnant mothers at risk. (These women will be identified from among low income families, as mothers with at least one child having PCM). Roughly 10 percent of pregnant women would receive a food supplement consisting of 120 g per day, for the last trimester of pregnancy. Those who receive supplements when pregnant would continue to receive supplements during the first 150 days of lactation; in addition, mothers of underweight babies (below 2,500 g at birth) would be provided with a supplement.

#### Organization and Management

45. The Director-General of Community Health, Ministry of Health, would have overall responsibility for the NIPP component. For the management of NIPP, he would be assisted by a National Coordinator, whose staff would include three Assistant Nutrition Program Officers (ANPO), one would be specifically responsible for training; there would be three administrative officers to assist.

46. In each province where NIPP would operate, the Governor of the Province would be responsible for the coordination and implementation of the nutrition program. For planning purposes, the Governor would be advised by the provincial planning authority (BAPPEDA); for coordination and implementation he would be advised by the Nutrition Improvement Coordinating Committee (BPDG) established at provincial and Kabupaten levels under the Applied Nutrition Program. The BPDG Executive Board is generally chaired by the Inspector of Health of the Province. Members consist of senior governmental representatives of agriculture, community development education, cooperatives, water supply, fisheries, religious affairs, etc. and of non-governmental organizations such as scouts and the Community Development Board (PMD). The Governor would be assisted by a Nutrition Program Officer (NPO) who, in addition to general duties, would have specific responsibility for monitoring and evaluation.

47. At the Kabupaten level, the Bupati, the chief executive of the Kabupaten, would be responsible for NIPP activities. He would be advised by the BPDG and would be assisted by two ANPOs, one of whom would have specific responsibility for training.

48. At the sub-district level, the Unit for Community Development (UDKP) would be responsible for advising the Camat (the executive head of the sub-district) on NIPP activities. He would be assisted by one ANPO and three supporting staff; one would be the Training Officer, one would be responsible for production and distribution of the food supplement and the third would deal with routine finance, returns and reports.

49. The Village Organization for Social Development under the chairmanship of the Lurah (village headman) would be responsible for village operations. There would be a Village Assistant Nutrition Program Officer (VANPO). Where possible, this would be initially a BUTSI volunteer 1/ working full-time, but failing that, VANPO, i.e. teacher, would be employed part-time. The VANPO would provide the local supervision for the village cadres, of whom there would be one per 25 families during the first year of operations. Appendix 2 shows the organizational structure of NIPP, Appendix 3 provides details of the staff requirements by years and Appendix 10 provides job descriptions for the National Coordinator, NPO, ANPO and others.

#### Linkages with Other Project Components

50. CRDN would be responsible for collecting and analyzing baseline data and mid-term and final surveys, for providing scientific and technical information for local production of food supplements and for advising on plans of operation. CRDN would be involved in the scientific evaluation of the NIPP component.

51. Pending the establishment of FTDC, the IPB Food Technology Group would develop improvements in storage and processing at the village level. Later, FTDC's pilot extension service would operate in the NIPP areas, identifying problems relating to local transport, storage preparation, processing, preservation, packaging and distribution of food. Identified problems would be studied by the FTDC and proposed solutions tested in the NIPP areas. The FTDC would advise on and monitor the quality of the food supplements.

52. One of the two sub-districts selected for trial of the nutrition education model proposed in the nutrition communication component, would be in a NIPP area. The proposed simulation of mass media communications for nutrition messages would also be used to reinforce nutrition educational activities of village cadres in NIPP areas.

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1/ BUTSI is an Indonesian volunteer agency using graduates who work in rural areas on approved projects.

### Training

53. The ANPO at the Ministry would be an officer with experience in training and extension and would be responsible for organizing staff training at national and provincial levels. Each Kabupaten would have an ANPO responsible for organizing the courses for VANPO and village cadres. The latter would be the specific responsibility of the Training Officers at sub-district level. Appendix 7 outlines the training proposals. The ANPO would be assisted by a training consultant.

54. NPOs and ANPOs would be trained at the Nutrition Academy, Jakarta, with the exception of those required for the first year, who may be trained abroad. A two month training course would be planned and carried out by the ANPO at the Ministry, assisted by the consultant and staff members of the Academy, CRDN and FTDC.

55. Training Officers would attend two month courses at provincial headquarters, probably at Surabaya. These courses would be planned and carried out by the ANPO at the Ministry, assisted by the consultant and provincial staff of the Unit for Family Health and Nutrition (UPGK).

56. VANPO would be trained at Kabupaten level. Their one month courses would be organized by the ANPO at the Kabupaten headquarters, but the curriculum would be planned by the Ministry staff, assisted by the consultant. Kabupaten staff of the Committee for Improvement of Family Nutrition would be involved in the training.

57. The way in which the component has been planned to expand would ensure that there would be normally two training courses per year for village cadres in each sub-district. The exception would be where villages are abnormally large and in such circumstances extra training officers have been included. The courses would be held at Health Centers or Agricultural Extension Centers in the sub-districts. Even allowing for preparation, the Training Officers would have ample time to conduct refresher courses and in-service in each sub-district annually.

### Technical Assistance

58. Provision has been made for 7 man-years of consultancy. Six man-months would be required for a consultant on nutrition education to advise on the program for NIPP areas and to prepare a simple manual. Ten man-months would be required for a consultant on the training of Nutrition Program Officers and Assistant Program Officers. The balance would be available, if required, for problem solving resulting from operational experience.

Costs

59. The costs of the project component are detailed in Appendix 8. They are subject to modification based on the results of the mid-term review.

Monitoring and Evaluation

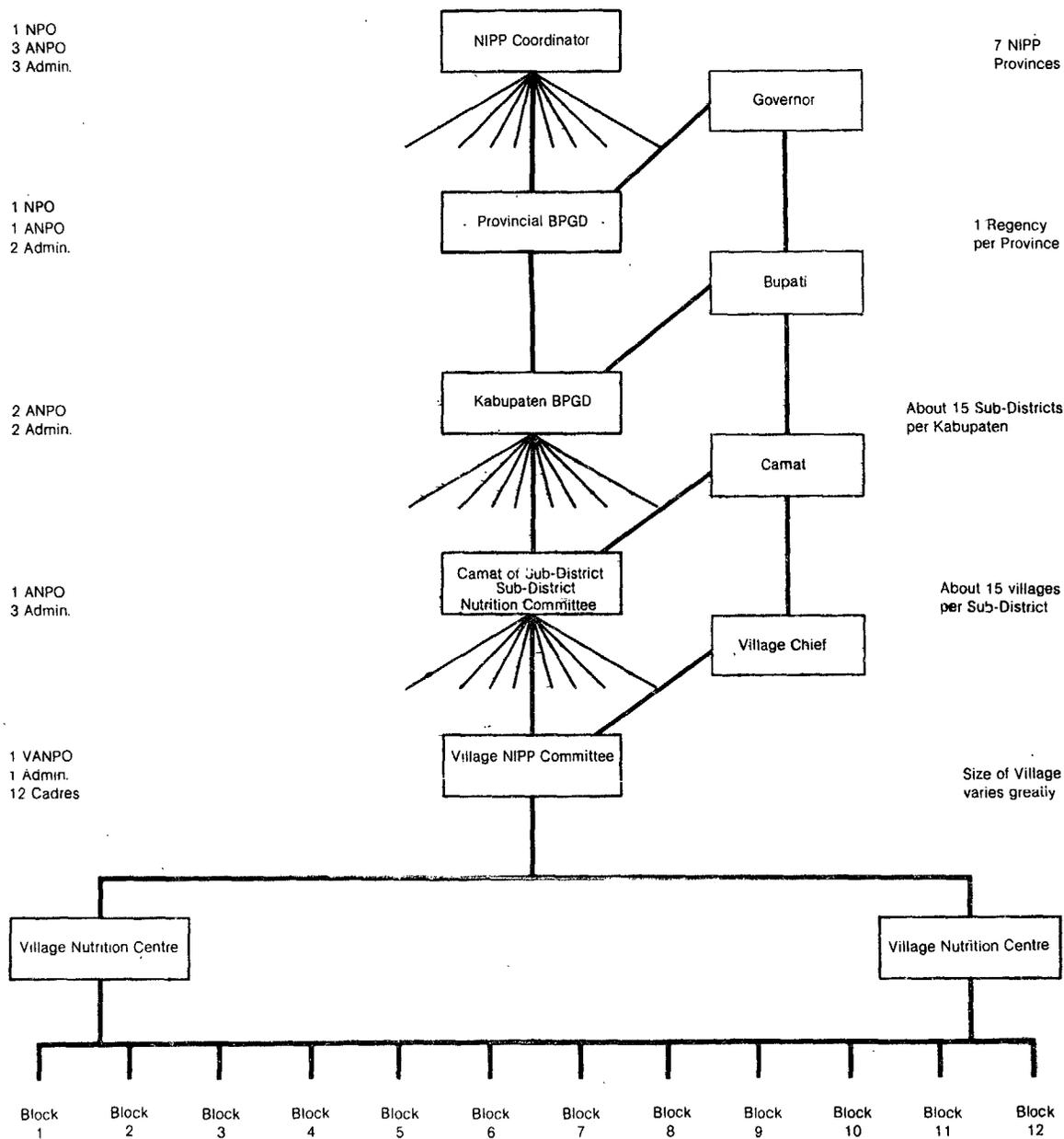
60. Base-line data collection, mid-term and final evaluation will be carried out by CRDN. The monitoring and evaluation unit, Ministry of Health, will request collection of data by management according to specific criteria and indicators. The unit will be responsible for designing the methodology and the format for data collection, the frequency of reporting by field staff and the subsequent analysis of the data. The unit will convey the results of analysis to project and component management and to CRDN. Effective evaluation is the most crucial factor in this component (see Annex 9). Evaluation would focus on issues of operational efficiency of the distribution system, intra-family consumption patterns and the effectiveness of the identification scheme of target PCM cases.







**INDONESIA NUTRITION DEVELOPMENT PROJECT  
ORGANIZATIONAL STRUCTURE OF NIPP**





INDONESIA NUTRITION DEVELOPMENT PROJECT

Nutrition Intervention Pilot Project

Staff by Category and Year

<u>National</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
Nutrition Program Officer	1	1	1	1
Assistant NPO	1	3	3	3
Administrative Officer	2	3	3	3
<u>Provincial</u>				
NPO	2	4	7	7
Assistant NPO	2	4	7	7
Administrative Officer	4	8	14	14
<u>Kabupaten</u>				
ANPO	4	8	14	14
Administrative Officer	4	8	14	14
<u>Sub-District</u>				
ANPO		6	18	37
Administrative Officer		18	54	111
<u>Village</u>				
VANPO		18	72	183
Administrative Officer		18	72	183
Cadre		580	1,900	2,320

INDONESIA NUTRITION DEVELOPMENT PROJECT

NIPP - Number of Beneficiaries

Area		Number of Villages	Population	Number of Children Under 3	Number of PCM Cases Under 3	Number of Children Given Food Supplement	Pregnant Women	Number of Pregnant Women Supplemented	Number of Lactating Women Supplemented
Bojonegoro	Year 2	9	27,360	3,033	855	855	1,233	243	231
	Year 3	27	82,080	9,099	2,565	2,132	3,699	729	693
	Year 4	57	173,280	19,209	5,415	3,873	7,809	1,458	1,386
West Lombok	Year 2	9	42,903	6,192	1,737	1,737	1,935	387	368
	Year 3	27	160,947	12,438	6,507	5,639	6,705	1,161	1,104
	Year 4	54	329,400	36,738	13,311	9,284	14,292	2,322	2,208
Central Java <sup>1/</sup>	Year 3	9	26,199	3,123	873	873	1,179	234	222
	Year 4	27	78,597	9,369	2,619	2,183	3,537	702	666
South Sumatra <sup>1/</sup>	Year 3	9	21,042	2,745	765	765	945	189	180
	Year 4	27	63,126	8,235	2,295	1,922	2,835	567	540
West Java <sup>1/</sup>	Year 4	6	38,160	4,998	1,398	1,398	1,716	342	325
Yogyakarta <sup>1/</sup>	Year 4	6	30,918	3,018	846	846	1,392	276	262
Bali <sup>1/</sup>	Year 4	6	27,000	3,594	1,008	1,008	1,218	246	234
Total <sup>1/</sup>	Year 2	18	70,263	9,225	2,592	2,592	3,168	630	599
	Year 3	72	290,268	27,405	10,710	9,409	12,528	2,313	2,199
	Year 4	183	740,481	85,161	26,892	20,514	32,799	5,913	5,621
Cumulative Total				100,000 <sup>2/</sup>	40,194	32,515	48,495	8,856	8,419

<sup>1/</sup> Villages to be chosen. Estimates based on average size of villages in the province.

<sup>2/</sup> The cumulative total of children under the age of three benefitted is around 100,000, taking into account the children of ages below two in the year (2) and (3).

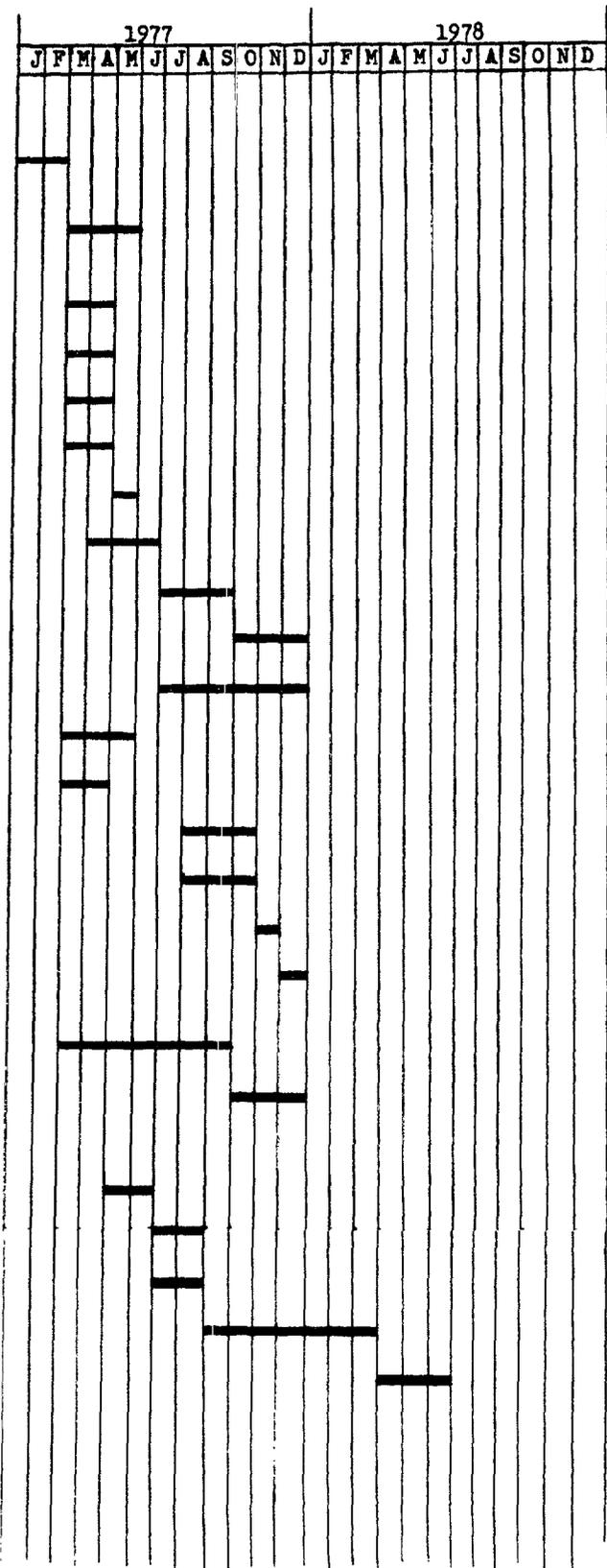
INDONESIA NUTRITION DEVELOPMENT PROJECT

ANNEX 4  
Appendix 5

NIPP Initial Activities

Action

- Appointment of National Coordinator of NIPP
- Recruitment of Nutrition Program Officers(NPOs and ANPOs)
- Establishment of Working Group on:
  - (a) Teaching Aids
  - (b) Baseline Data
  - (c) Training
  - (d) Food Supplements
- Procurement of Vehicles
- Recruitment of Nutrition Education Consultant
- Preparation of Manuals on Nutrition Education
- Testing of Manuals
- Preparation and Testing of Teaching Aids
- Preparation of Course for NPO/ANPO's
- Consultant on Training
- Training of NPO/ANPO's
- Workshops for Provincial EPGD
- Testing of Food Supplement
- Production Equipment Ordered
- Draw up Plans of Operations for NIPP for the two Kabupatens
- Approval of Plans of Operation by Government
  
- Discussion on Baseline Data
- Identification of Sample for Baseline Data
- Procure Equipment for Baseline Survey
- Baseline Data Collection
- Baseline Data Analysis





INDONESIA NUTRITION DEVELOPMENT PROJECT

NIPP Training Courses

Trainees	Year	Number to be Trained	Number of Classes	Where Held	Who Responsible	Duration
NPO and ANPO	1	16	1	Jakarta Nutrition Academy	ANPO(Training)MOH HQ. Assisted by Consultant	2 months
	2	18	1			
	3	33	1			
Training Officers	1	9	1	Provincial HQ Probably Surabaya	ANPO(Training)MOH HQ.	1 month
	2	18	1			
	3	23	1			
VANPO	1	18	2	Kabupaten HQ.	ANPO(Training)Kabupaten	1 month
	2	54	4			
	3	111	7			
Village Cadres	1	580	18	Sub-District HQ.	Training Officers	1 month
	2	1,900	54			
	3	2,320	100			

INDONESIA NUTRITION DEVELOPMENT PROJECT

Nutrition Intervention Pilot Project (NIPP), Including Agricultural Support  
Detailed Table of Costs  
US\$ '000

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Total</u>
1. <u>Installation</u>					
a. Construction of village nutrition centers <u>1/</u>	-	2	4	7	13
b. Equipment <u>2/</u>					
(i) Village nutrition centers		4	9	18	31
(ii) Food supplementation	2	3	6	10	21
(iii) Anthropometric measurements	7	23	42		72
(iv) Nutrition education	18	18	27		63
c. Vehicles <u>3/</u>	57	58	90		205
Sub-Total 1.	84	108	178	35	405
2. <u>Training 4/</u>	41	123	174	43	381
3. <u>Food Supplementation 5/</u>		26	85	196	307
4. <u>Nutrition Education</u>					
a. Teaching aids	32	38	75	75	220
b. Workshops and seminars	21	22	32		75
Sub-Total 4.	53	60	107	75	295
5. <u>Health Support 6/</u>					
Immunization		13	36	66	115
6. <u>Agricultural Support</u>					
a. Home Gardens Extension	50	60	130	260	500
b. Improved local storage and processing	20	42	60	78	200
Sub-Total 6.	70	102	190	338	700
7. <u>Administration</u>					
a. Salary support	11	35	87	170	303
b. Travel and per diem	20	23	46	81	170
c. Other	15	25	46	105	191
Sub-Total 7.	46	83	179	356	664
8. <u>Technical Assistance</u>	50	75	75		200

INDONESIA NUTRITION DEVELOPMENT PROJECT

Nutrition Intervention Pilot Project (NIPP)

Detailed Table of Costs

US\$ '000

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Total</u>
9. Surveys and Evaluation <u>8/</u>					
a. Surveys	18	28	37	47	130
b. Evaluation		20	30	40	90
Sub-Total 9	18	48	67	87	220
 TOTAL BASE COSTS	 362	 638	 1,091	 1,196	 3,287

- 1/ The cost per village nutrition center is expected to be US\$50. One village nutrition center would be set up for a population of 3,000-4,000 on an average.
- 2/ Cost of furniture and equipment per village nutrition center is expected to be US\$125. Anthropometric measurement equipment (US\$286) per village. Food supplementation equipment estimated to cost \$550 per sub-district. Nutrition education requires \$9,000 per Kabupaten for overhead projectors, screens, tape recorders, video camera and generator.
- 3/ 1 sedan for headquarters  
 2 fourwheel drive per Kabupaten } @ US\$10,000  
 1 motorcycle per sub-district @ US\$ 900  
 1 cycle per village @ US\$ 100  
 1 motorcycle per province for  
 audit @ US\$ 900
- 4/ See Annex 4 Appendix 8 Page 4.
- 5/ Raw materials @ 120 Rps. per kilo  
 Processing @ 120 Rps. per kilo  
 Cost per child for 90 days US\$ 4.20  
 Cost per lactating mother 10.70  
 Cost per pregnant woman 6.30  
 Audit cost per regency 15.00  
 Quality control per regency 12.00
- 6/ Cost of immunization vaccines @ \$1 per child
- 7/ Details of salary support in Annex 4, App. 8, Page 3.
- 8/ Cost of sample survey based on \$3.60 per sample

INDONESIA NUTRITION DEVELOPMENT PROJECT

NIPP Staff Development: Pattern and Cost

US\$ '000

Staff Member	Cost Per Month US\$	Number of Man/Months				Total Cost US\$
		Year 1	Year 2	Year 3	Year 4	
<u>National Level</u>						
NIPP Co-ordinator	100	12	12	12	12	4,800
ANPO 3 (Training; Finance & Procurement; Admin.)	75	30	36	36	36	10,350
Admin. Staff 2 (Finance & Procurement; Admin.)	50	24	24	24	24	4,800
<u>Provincial Level</u>						
NPO	75	12	36	66	84	14,850
ANPO (Training, Finance and Audit)	50	12	36	66	84	9,900
Administrative 2 (Finance and Audit; Admin.)	35	24	72	132	168	13,860
<u>Kabupaten Level</u>						
ANPO 2 (Management; Training)	50	24	72	132	168	19,800
Admin. 3 (Training; Fin. & Procurement; Admin.)	30	36	108	198	252	17,820
<u>Sub-District Level</u>						
KIPO	30	36	72	216	444	23,040
Training Officer	30	36	72	216	444	23,040
Admin 2 (Food Supplement; Admin.)	20		144	432	888	29,280
<u>Village Level</u>						
VANPO	15		216	864	2,196	49,140
Administrative	10		216	864	2,196	32,760
Village Cadres (Non-monetary inducements) <sup>1/</sup>	-					50,000
						\$303,440

<sup>1/</sup> Includes uniforms, certificates, inter-village competitions.

INDONESIA NUTRITION DEVELOPMENT PROJECT

NIPP Costs of Training  
US\$ '000

Trainee	Where Held	Cost Per Person Per Course	Year 1		Year 2		Year 3		Year 4		Total
			No.	Cost	No.	Cost	No.	Cost	No.	Cost	
a. <u>Overseas</u> NPO/ANPO	Overseas	5,500	4	10,000	Cont'd	12,000					22,000
b. <u>Internal</u> NPO/ANPO	Nut. Acad.	350	12	4,200	18	6,300	33	11,550			22,050
Training Officers	Prov. H.Q.	125	9	1,125	18	2,250	23	2,875			6,250
VANPO	Sub-Dist.	50	18	900	54	2,700	111	5,550			9,150
Village Cadres	Sub-Dist.	40-50	580	25,200	1,900	92,880	2,320	128,000			246,080
				31,425		104,130		147,975			283,530
<u>Refresher Training</u> NPO/ANPO	Nut. Acad.	100			16	1,600	34	3,400	67	6,700	11,700
Training Officers	Prov. H.Q.	40			9	360	27	1,080	60	2,400	3,840
VANPO	Sub. Dist.	15			18	270	72	1,080	183	2,785	4,135
Village Cadres	Sub. Dist.	10			500	5,000	2,000	20,000	3,120	31,200	56,200
						7,230		25,560		43,085	75,875
Total Costs				41,425		123,360		173,535		43,085	381,405

INDONESIA NUTRITION DEVELOPMENT PROJECT

NIPP Motivation Workshops

	No. of Days	Cost per Person per day	YEAR 1			YEAR 2			YEAR 3			Total Costs US\$
			No. of Areas	No. of People	Cost US\$	No. of Areas	No. of People	Cost US\$	No. of Areas	No. of People	Cost US\$	
National	5	\$48.20	1	20	4,820	-	-	-	-	-	-	
Provincial	7	25.80	2	40	7,224	2	40	7,224	3	60	10,836	
Kabupaten	7	17.20	2	40	4,816	2	40	4,816	3	60	7,224	
Sub-District	7	5.20	6	120	<u>4,368</u> 21,228	12	240	<u>8,736</u> 20,776	19	380	<u>13,832</u> 31,892	<u>73,896</u>

INDONESIA NUTRITION DEVELOPMENT PROJECT

Nutrition Intervention Pilot Project

Improved Local Storage and Processing: Cost Estimates  
(US\$)

	<u>Year</u>				<u>Total</u>
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	
<u>Storage</u>					
Field study by food technology group	5,000				5,000
Development of prototypes	5,000				5,000
Trial of selected prototypes		20,000			20,000
Seminar and policy decisions		2,000			2,000
Extension program			<u>50,000</u>	<u>68,000</u>	<u>118,000</u>
Sub-Total	10,000	22,000	50,000	68,000	150,000
<u>Processing</u>					
Survey and preparation field work	10,000				10,000
Laboratory experiments and trials		12,500			12,500
Seminar and policy/program		2,000			2,000
Extension program		<u>5,500</u>	<u>10,000</u>	<u>10,000</u>	<u>25,500</u>
Sub-Total	10,000	20,000	10,000	10,000	50,000
Total	20,000	42,000	60,000	78,000	200,000

INDONESIA NUTRITION DEVELOPMENT PROJECT

Nutrition Intervention Pilot Project

Job Description and Qualifications

National Coordinator for NIPP

Job Description

1. The National Coordinator would be responsible to the Project Director for:

- (a) coordinating all sub-components of NIPP and being the normal channel of communication between the Executive Secretary and field staff;
- (b) administering the NIPP, including office and personnel management, accounting and procurement;
- (c) transferring funds on a timely basis for the sub-components activities;
- (d) arranging for the physical control and checking of project stores;
- (e) arranging for the control of transport;
- (f) arranging for staff training through the ANPO in charge of training;
- (g) supervising the establishment of village nutrition centers;
- (h) arranging for the processing, packaging, distribution and accounting for supplementary foods;
- (i) liaison with CRDN on base-line data collection; and
- (j) reporting progress through regular written reports.

Qualifications

2. Experience in successful management would be the main criterion; proven administrative ability at least at provincial level and experience in dealing with government departments and procedures would be essential; a sound basic knowledge of nutrition would be desirable.

Nutrition Program Officer (Provincial)

Job Description

3. The NPO would be responsible to the Governor of the Province for:
- (a) coordinating NIPP activities within the province;
  - (b) being the channel of communication between the National Coordinator for NIPP and field staff;
  - (c) being the project representative on the UPKG provincial committee;
  - (d) arranging for the monitoring of progress, as agreed with CRDN and the monitoring and evaluation unit in the Ministry of Health and for evaluating the data to assess results achieved by the differences between actual and planned action, unanticipated problems, and for instigating immediate action to deal with them;
  - (e) supervising the work of the audit unit in checking on supplementary food production, distribution and utilization and on accounting for the food at all stages; and
  - (f) reporting to the Governor and to the NPO Headquarters as required.

Qualifications

4. Experience in management and supervision would be the main requirement, proven administrative ability and experience at provincial level of dealing with government departments and procedures would be essential. Ability to collaborate harmoniously with colleagues and facility in presenting proposals to those in authority or to committees would be important. A basic knowledge of nutrition would be desired.

Assistant Nutrition Program Officer (Training) Headquarters

5. ANPO (Training) would be responsible to the National Coordinator for:

- (a) coordinating all training activities within the component;
- (b) preparing with assistance from a training consultant: the curricula for national courses for NPO and ANPO, provincial courses for Training Officers, and Kabupaten courses for VANPO;
- (c) organizing and running courses, with assistance from a training consultant, for NPO and ANPO and for Training Officers;
- (d) arranging for the production of teaching aids for training courses; and
- (e) reporting progress on training as required.

6. High level experience in training and extension would be the main criterion, with experience of organizing and running courses at national level. A sound knowledge of applied nutrition would be essential.

Assistant Nutrition Program Officer (Kabupaten)

Job Description

7. The ANPO (Kabupaten) would report to the Bupati (Chief Executive) of the Kabupaten and be responsible for:

- (a) administration of the sub-component within the Kabupaten;
- (b) control of component expenditure;
- (c) control and security of project stores;
- (d) control of transport;
- (e) arrangements for adaptation or construction of village nutrition centers;
- (f) direction of ANPO (sub-district), VANPO and village cadres;
- (g) organization of the processing, packaging, distributing and accounting systems for the supplementary foods;
- (h) representing the NIPP component on the Kabupaten BPDG;
- (i) liaison with health, agriculture, cooperatives and marketing, education and water authorities; and
- (j) reporting on progress as required.

Qualifications

8. Experience of successful management at Kabupaten level would be the main criterion, with proven ability in handling a large staff and in collaborating with colleagues. A basic knowledge of nutrition would be desired.

Assistant Nutrition Program Officer (Kabupaten/Training)

Job Description

9. The ANPO (Kabupaten/Training) would be responsible to the Bupati for:

- (a) coordinating all nutrition training within the Kabupaten, as directed by the ANPO (training headquarters);
- (b) organizing and running the courses for VANPO;
- (c) supervising the courses run by training officers for the village cadres;
- (d) organizing in-service and refresher courses as required;
- (e) collaborating with the ANPO (Kabupaten) in running seminars and workshops for key personnel at Kabupaten and sub-district levels; and
- (f) reporting on progress in training as required.

Qualifications

10. Experience in training and extension would be essential and a sound knowledge of nutrition desired.

Nutrition Education Consultant

Job Description

11. The nutrition education consultant would advise the Project Director and assist the National and Provincial NPO in:

- (a) identifying the content or topics for appropriate nutrition education;

- (b) formulating the messages relevant to the content or topics;
- (c) designing a nutrition education program based on these messages;
- (d) preparing teaching aids to support the program;
- (e) selecting equipment suitable for the program;
- (f) preparing (i) a simple manual on nutrition education suitable for contact personnel and (ii) a manual suitable for supervisory personnel;
- (g) developing the organization of nutrition education using all available media and methods;
- (h) coordination with the Center for Manpower and Training, Ministry of Health;
- (i) developing an evaluation system for nutrition education;
- (j) integrating the program of the NIPP areas with the other nutrition education programs of the Government of Indonesia; and
- (k) other appropriate tasks as required by the Director General of Community Health.

#### Qualifications

12. The nutrition education consultant would be familiar with the techniques and content of nutrition education suitable for a program in a developing country, where a proportion of the adults are illiterate, the socio-economic level is low and the available, low-priced foods are limited. The specialist would have experience in how to identify motivating factors in the community and be able to use this knowledge in defining a nutrition education program. The specialist should have the ability to communicate effectively with others at a variety of educational levels.

#### Nutrition Training Specialist

13. The Nutrition Training Specialist would advise the Project Director and assist the ANPO (Training) to:

- (a) prepare the curriculum for a training course for NPO and ANPO based on two major aspects: (i) planning and management and (ii) basic nutritional knowledge;

- (b) prepare or arrange for the necessary teaching aids for the course;
- (c) assist the Ministry of Health in the preparatory arrangements for the course;
- (d) establish good working arrangements with all involved in the nutrition project; especially in the NIPP component;
- (e) prepare detailed notes for the course as a guide to counterparts;
- (f) conduct the first three month course;
- (g) review the achievement of the course and adjust the curriculum and subject matter as necessary;
- (h) conduct the second three-month course;
- (i) advise on the training of Village Assistant Program Officers (VANPOs) and village cadres;
- (j) review the achievement of the VANPO and village cadre courses and advise on adjustments required; and
- (k) undertake other appropriate tasks as required by the Director General of Community Health.

#### Qualifications

14. The nutrition training specialist would be familiar with planning and implementing successful nutrition programs in developing countries, and with the techniques of teaching such planning and implementation. The specialist would have experience of instructing and guiding counterparts so that those engaged on the NIPP senior training program would be capable of running the NPO/ANPO course in the third year.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Anemia Prevention and Control Pilot Project - Plantations

Introduction

1. The adult human body contains 3-4 g of iron, of which more than two-thirds is in haemoglobin, the pigment of the red blood cells. The daily iron loss of an adult man weighing 65 kg is about 0.9 mg. Absorption of iron takes place in the stomach and through the small intestine. While about 30 percent of iron in meat is absorbed, only about 10 percent of the iron present in cereals, vegetables and pulses is absorbed. (Intake of vitamin C could facilitate a higher absorption of ingested iron.)

2. Iron deficiency anemia occurs when losses of iron from the body are not balanced by absorption of sufficient iron to compensate for both normal and abnormal losses. Lack of iron is reflected by a deficiency of haemoglobin. This affects physical capacity by reducing the availability of oxygen to the tissues. The combination of a poor dietary intake of iron and bleeding from hookworm infestation are the most common causes of iron-deficiency anemia in Indonesia.

Research on Nutritional Anemia and Productivity

3. A 1973 study 1/ of a sample of male construction workers found anemia in 52 percent of workers in Rentang, 45 percent in DALardarma and 28 percent in Halim. The level of anemia in adult males in Indonesia is the highest ever recorded under non-famine conditions for this disease. Hookworm infestation was found in 85 percent of samples at all sites. It was concluded that there was a high incidence of nutritional anemia due to poor utilization of iron in the diet and iron loss from hookworm infestation. There was also sufficient evidence that anemia interferes significantly with workers' physical endurance.

4. A follow-up study 2/ was undertaken in 1974, to compare productivity levels of anemic and non-anemic workers. A sample of 300 workers were given

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1/ D. Karyadi and S. S. Basta, Nutrition and Health of Indonesian Construction Workers: Endurance and Anemia. IBRD Staff Working Paper No. 152, 1973.

2/ S. S. Basta and A. Churchill, Iron Deficiency Anemia and the Productivity of Adult Males in Indonesia, IBRD Staff Working Paper No. 175, 1974.

a pill daily; some received a pill containing 100 mg elemental iron and others a placebo. Productivity before and after treatment was measured by the weight of latex tapped per day by workmen or the total area excavated by weeders in a five-hour day. The output of anemic tappers before treatment was 19 percent below that of non-anemic tappers. After iron treatment, output of anemic workers reached the level of the non-anemic tappers. Those anemic tappers who received a placebo remained about 15 percent below the productivity of their counterparts treated with iron. Among weeders, the productivity of anemic workers was about 25 percent below that of non-anemic workers. The former anemics whose haemoglobin levels rose as a result of treatment also cultivated a significantly (up to 25 percent) larger area than the anemic groups whose haemoglobin levels did not rise. Treatment of anemic workers with daily pills containing iron brought about an increase in productivity of about 20 percent.

5. The two studies concluded that attempts to correct iron deficiency of anemic workers would lead to substantial increases in productivity. The costs of iron supplementation per man-year were less than a dollar, which indicates best the very high benefit-cost ratio.

6. If ferrous sulphate pills could be continually given, the anemia could be cured. In actual practice, however, a problem occurs after about 60 days of treatment, when nausea appears as a side-effect and the Indonesian experts have therefore been searching for alternative solutions. One solution suggested has been the fortification of salt with iron.

#### Fortification of Salt

7. Unlike the addition of vitamins, the fortification of salt with iron presents certain technical difficulties. Chief among these difficulties are that iron compounds, which are even slightly soluble in water, affect fortified foods by causing changes in color, odor, and cooking quality. Insoluble iron compounds are absorbed much less readily than soluble iron compounds. One of the successful methods <sup>1/</sup> has been to fortify salt with ferric orthophosphate, a stable iron compound, and to use sodium bisulphate to promote absorption. So far, this has been found to be satisfactory although costs are higher than for ferrous sulphate. Pilot tests are underway in field conditions in India utilizing iron-fortified salt. At a level of 1,000 parts per million, fortification of salt with iron orthophosphate would provide 1 mg iron per gram of salt. Estimates of salt intake range between 2 kgs per capita per year and 4 kgs per

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1/ Fortification of Common Salt with Iron: Effect of Chemical Additives on Stability and Bioavailability. Narasinhga Rao, B.S. and Vijayasathy. "The American Journal of Clinical Nutrition", December 1975.

capita per year -- a mean of about 8 grams per capita per day 1/. Given an absorption rate of 4 percent, salt fortified with about 1,500 ppm would provide about 0.5 mg of additional absorbed iron per day, which would be over half the recommended iron allowance for adult males 2/.

Component Description and Objectives

8. Since the relationship between treatment of nutritional anemia and productivity has been revealed (see paras. 3 to 5 above), the main objective of this component is to test:

- (a) the logistical feasibility of establishing a delivery system for iron supplementation, and
- (b) the economic implications on output and employment.

9. Three pilot areas would be selected: one in East Java consisting of two government owned plantations, each with about 500 workers, one plantation with health services and the other without such services; one government plantation in North Sumatra, with about 1,000 workers and health services. The inclusion of 10 small, privately owned plantations each employing about 100 workers in South Sulawesi and West Sumatra is planned at a later stage, provided the Directorate General of Manpower Protection and Care of the Ministry of Manpower, Transmigration and Cooperatives can establish a delivery and health system in these localities.

10. The project provides financing for:

- (a) the supply of iron pills to cure nutritional anemia among plantation workers;
- (b) medication and provision of shoes for tackling the problem of hookworm infection;
- (c) imports of iron fortified salt in the initial stage, to be followed by local salt fortification as needed for the project;
- (d) arrangements for delivery of iron fortified salt to workers to ensure that an adequate iron level is maintained; and
- (e) monitoring and evaluation.

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1/ Estimates of salt consumption derived.

2/ Handbook of Human Nutrition Requirements. FAO Nutrition Studies No. 28: WHO Monograph Series No. 61, 1974.

11. The anemic laborers would be provided with a daily pill containing 70 mg iron in the form of ferrous sulphate. These pills would be distributed by paramedical staff where there are health facilities and by junior staff of the management or owners in other instances. The distribution staff would be required to observe the taking of the pill. The therapy would be given for about 60 days after which haemoglobin levels should become normal. The hypothesis is that once haemoglobin levels are normal they can be maintained at a normal level through adequate iron intake in the diet. The Ministry of Health would procure internationally iron fortified salt while the National Institute of Industrial Hygiene and Occupational Health (NILHOH) will make arrangements for its distribution to the selected estate laborers and their families. The absorbable iron available in fortified salt (0.5 mg per person per day) is believed to be a sufficient addition to the present diet to maintain the required iron intake.

12. The daily loss of blood due to hookworms may amount to 3 millimeters per 100 worms. Where infestation is heavy the loss can be a major factor in nutritional anemia. At the beginning of the period of iron therapy, anti-helminthics would be used to deal with the hookworm infestation. Simultaneously, action would be taken to prevent reinfestation by the provision of boots, latrines and education in personal hygiene.

13. Through nutrition education, efforts would be made to improve the iron content of diets and the intake of vitamin C which ensures a better iron absorption. The best food sources of iron are meat, fish, poultry and eggs, all consumed in small quantities because of cost. The second best sources are green leafy vegetables, soybeans, other legumes, potatoes and whole grain cereals (polished rice has a low iron content). Since most plantation workers are landless, green leafy vegetables are not consumed in sufficient quantities. Plantation management would, therefore, provide small plots of plantation land for laborers to enable them to grow their own vegetables.

14. The scientific and technical design of the project would be the responsibility of the CRDN and the NILHOH, while the field work would be carried out by the Regional Institution of Industrial Hygiene and Occupational Health (RILHOH). The latter two institutes are under the Directorate General of Manpower Protection and Care of the Ministry of Manpower, Transmigration and Cooperatives. Preliminary visits to plantation areas would be undertaken by CRDN and NILHOH to brief management and workers, and to finalize plans of operation. These visits would be followed by a base-line data survey, which would include determination of haemoglobin in the blood and infection. Simultaneously, data would be collected on the productivity levels of the workers according to specified objective criteria.

#### Evaluation

15. The final evaluation, which will be undertaken by NILHOH in cooperation with CRDN, would include medical tests (haemoglobin and hookworm infection) which are essential for determining the effectiveness of the action

taken. Initially, the iron supplementation would be given on a grant basis, with an average annual cost of less than US\$1 per person. If, as is expected, the increased productivity of anemic workers would be significantly greater in value than the cost of iron supplementation and helminthic suppression, then a general application of the measures would be initiated by government regulations with the individual estates bearing the cost. Should this situation arise, NILHOH would have to be strengthened in order to initiate, implement and monitor a national program. Provision has been made for such possible action.

Management

16. The coordinator for NIPP, in the Ministry of Health, would have administrative responsibility for the component. CRDN would be responsible for the sound scientific basis for action. NILHOH would be responsible for the operational action, through delegation to RILHOHs, each of which would work in close collaboration with the Directorate General of Plantations, Ministry of Agriculture.

Costs

17. The estimated cost of the component would be \$174,000. Details of cost are given in Appendix 1.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Costs of Anemia Prevention and Control Pilot Project - Plantations

US\$ '000

	Year 1	Year 2	Year 3	Year 4	Local	Foreign	Total
<u>Non-Construction</u>							
1. <u>Equipment</u>							
a. Vehicles	15				9	6	15
b. Equipment for biochemical Determinations	10				3	7	10
2. <u>Operating Costs</u>							
a. Project Preparation	2.8				2.8		2.8
b. Base-line Data	4	22			26		26
c. Iron Therapy		10			5	5	10
d. <b>Iron Salt Supplementation</b>		6	6		6	6	12
e. Anti-helminthic Treatment		7	3		5	5	10
f. Provision of Protective Boots		22.5			22.5		22.5
g. Construction of Latrines		6	6		12		12
h. Other	2.2	0.5	1		3.7		3.7
3. <u>Evaluation</u>			12	8	20		20
4. <u>Extension to Other Plantations</u>				30	30		30
	34.0	74.0	28.0	38.0	145.0	29.0	174.0

INDONESIA NUTRITION DEVELOPMENT PROJECT

Nutrition Communication and Behavioral Change

1. The Presidential Instruction (INPRES) of September 1974 requires improvement in the variety, quantity and nutritional quality of foods consumed by all levels of society in all regions of Indonesia, but this will depend on changing food behavior in order to optimize the use of available food supplies. The ANP Evaluation Study 1973 1/ found that even in the better off families 41 percent were deficient in both protein and calorie intake. This finding gives an indication of the lack of knowledge about the use of available food. Food habits relating to choice of foods, methods of preparing and cooking foods, distribution of foods within the family, weaning practices and feeding the sick child are likely to be responsible for the gap between food availability and consumption.

2. Earlier attempts to improve utilization of available foods through nutrition education concentrated on five food groups: (a) carbohydrates; (b) vegetables; (c) fruits; (d) animal protein and (e) dairy products. These education efforts were not directed to the poor who in any case would have found animal protein or dairy products well beyond their means. In the absence of baseline data and systematic evaluation methods, the possible impact of the education programs could never be determined. A detailed study of food habits in Indonesia has shown how cultural taboos affect food consumption patterns and lead to adverse nutritional results. Apart from income considerations, behavioral constraints are some of the critical factors in bringing about improvement in nutritional status.

3. The proposed component on nutrition communication would determine the degree to which behavioral constraints can be modified and what methods would be most effective, taking into account the costs. Knowledge of existing food habits, patterns and beliefs would form an essential base from which to plan and measure desirable change. Such data would be used, in conjunction with information on attitudes and knowledge as a baseline for the proposed action. In three selected sub-districts, data would be collected on quality of food consumption as well as on behavioral aspects. Following an assessment of the nutritional problems and their likely causes, suitable educational methods would be devised and available media and agency activities would be coordinated to launch a practical and integrated approach to nutrition education. The experience gained in these three selected areas would assist the Government in the preparation of a national nutrition education campaign to be part of the national nutrition program which is expected to be implemented during the Third Development Plan.

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1/ An evaluation study of the results of the Applied Nutrition Program 1963-73, was carried out by Prof. Sayogyo. The study included a food consumption survey of 920 households from villages where the ANP program has been applied intensively.

Component Objective and Activities

4. The general objective would be to develop measures to bring about desirable changes in nutrition behavior in three selected areas for replication on a national scale, by identifying the most critical behavioral constraints. Among the specific activities to be undertaken to achieve this objective would be to:

- (a) decide on the know-how and skills required to overcome behavioral problems and implement remedial measures;
- (b) select the content of nutritional messages, to design their form, select the appropriate media mix to be used and the methods of operation;
- (c) train village cadres as the contact personnel, sub-district staff to supervise them and technicians to handle the communications equipment;
- (d) hold seminars at national and provincial levels to make decision makers aware of the education program;
- (e) hold workshops at Kabupaten, sub-district and village levels to explain the knowledge and skills required and the methods to be used;
- (f) carry out the planned program in each selected village, with continuous monitoring, feedback and adaptation, if required;
- (g) evaluate the changes in behavior relating to food and nutrition;
- (h) identify the contribution of mass media and prepare and test material potentially useful for wider application; and
- (i) develop feasible and replicable techniques in nutrition education and communication, for subsequent inclusion in the national nutrition plan.

5. The national strategy for regional development involves concentration of inputs from various sectors in the same community. During the first year of the Second Five-Year Development Plan, 148 sub-districts were selected as Units for Community Development (UDKP), three of which would be chosen as the operational areas for this component, one of which would be in a NIPP area. The designated component director, in collaboration with the local authorities, selected three UDKP sub-districts. In Central Java, the selected area is situated on a fertile area of the Merapi volcano, where the leadership is strongly influenced by the local Islamic Training Center. The sub-district in Yogyakarta

is in a densely populated area, whereas the site in South Sumatra has a population, scattered in clusters over a wide geographic area. The three areas comprise 36 villages with about 110,000 direct beneficiaries.

6. Baseline information would be established from a random sample of 300 families in each area, describing food habits of the population before the beginning of the education program to be used for planning the education program and later for the evaluation of its effectiveness. The CRDN would be responsible for the baseline survey and evaluation, using the same parameters as for evaluation of other components. A consultant 1/ would assist CRDN to design the content and methodology for the collection of information on food habits.

7. A communications expert would decide on the basis of available information (food habits and nutritional problems), the form of the message, the media mix to be used, the timing of the communication and the preparation of any teaching aids to support or reinforce the message impact. All messages would be tested with a sample from the selected communities, to ensure that the message would be interpreted and understood as intended.

8. The messages would be communicated through village cadres, the utilization of audio-visual equipment and seminars. The messages would be simple and would be based on the research findings at CRDN, FTDC, and other research centers. Working manuals and suitable teaching materials would be developed, pretested and produced. These materials would be in accordance with the particular food and nutrition problems, cultural conditions, educational standards, and resources of the specific areas where they would be used.

9. Village cadres would engage in inter-personal communication with members of the communities. They would be individuals, mostly women, selected by the village people from among members of voluntary organizations (PKK), or community development workers, paramedical personnel or informal leaders. One cadre would be responsible for 50 households, so that on an average each village would have 12 cadres. Sub-district supervisors would be appointed on the basis of one supervisor for three villages. Since the effectiveness of the cadres would depend on the on-job training and the quality of supervision received, sub-district supervisors would be trained to provide the necessary supervision. The supervisor would be responsible for training and supervising the village cadres, who would receive one month's initial training at the sub-district health center. The training of all cadres in a sub-district would require four months, with one course at a time using the facilities.

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1/ See Appendix 4 for job description.

10. After the initial training of cadres is completed, the supervisors would be responsible for organizing periodic meetings of cadres as a means to feedback information and as an opportunity to provide advice and encouragement to the cadres.

11. Interpersonal communication would be supplemented and complemented in the villages by various methods and media. Each sub-district would be provided with communications equipment: projectors, screens, tape-recorders, camera and video-tape. Two technicians for each sub-district would be trained to use and maintain the equipment. In particular they would be trained in using the video-tape and tape recorders to simulate television and radio broadcasting. Through feedback from the use of this equipment, "soft-ware" would be developed for mass media use in the national nutrition program.

12. Technical assistance would be provided for training technicians in the use and maintenance of equipment and in planning the development of mass media communications. It is important that development of "soft-ware" for mass media should be undertaken as part of this component so as to prepare for the expected expansion of community based television and radio broadcasting being carried out currently and to be enhanced by the communication satellite already launched. 1/ Close liaison with the Office of Educational Development, Ministry of Education, would ensure that the nutrition "soft-ware" would be incorporated in the overall program of mass communication.

13. The component includes a series of seminars for key personnel and working level staff in the ministries and agencies involved in the nutrition development project. At national and provincial levels, seminars of one day's duration would be held for high level key staff to create awareness of the project and to solicit their support for the project activities. Short seminars would also be held at the end of the project period to report on results and to seek expansion to a national program. At Kabupaten and sub-district levels, workshops of longer duration would deal with details of the various activities.

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1/ There is a main TV station in Jakarta, and two regional transmitters catering to 360,000 TV viewers, and three regional stations. The Government has provided 600 TV sets at district level, and in 1976, is expected to distribute another 6,000. Radio sets are owned by 35 percent but listened to by 70 percent of the population. An expansion of all main media services with TV and radio covering the whole of Indonesia is planned for 1976. There is a Government Film Production Center, which produces weekly national newsreels, and around twelve half-hour films a year. The Ministry of Information has a number of mobile cinemas that show films to the villages every three months.

### Organization and Administration

14. The Director in charge of the component would be the Chairman of the Center for Manpower Training, Ministry of Health, who would work on a part-time basis. The Director would be assisted by four full-time staff, two of whom would be nutritionists and the others a health educator and an administrator. One would be responsible for data collection, analysis and interpretation, and development and evaluation of nutrition messages. The second would undertake selection of field staff, their training and supervision. The third would organize seminars and workshops and be responsible for feedback and reports. As and when required, the Director of this component would seek consultant assistance from the Project Director.

15. A member of the Provincial Committee for Better Family Nutrition would be appointed as the provincial supervisor of this component. He would keep the committee informed of component activities and would receive advice from the committee. There will also be part-time supervisors at Kabupaten and village levels. The Kabupaten supervisor would be assisted by two part-time officers, one of whom would have special responsibility for training and the other for personnel, finance and procurement. The organization chart is in Appendix 1.

### Technical Assistance

16. The component would provide 12 man-months of technical assistance for expatriate advisors and 35 man-months for local advisors and consultants. The experts would be required for the baseline data collection and evaluation of behavioral change; the form and design of the messages, the selection of media, the testing of material and evaluation of impact; the development of nutrition components in the curricula for schools, colleges and courses; and the planning of the educational and communications component for a national nutrition program. Fellowships would be provided to train specialists in communication techniques for nutrition education.

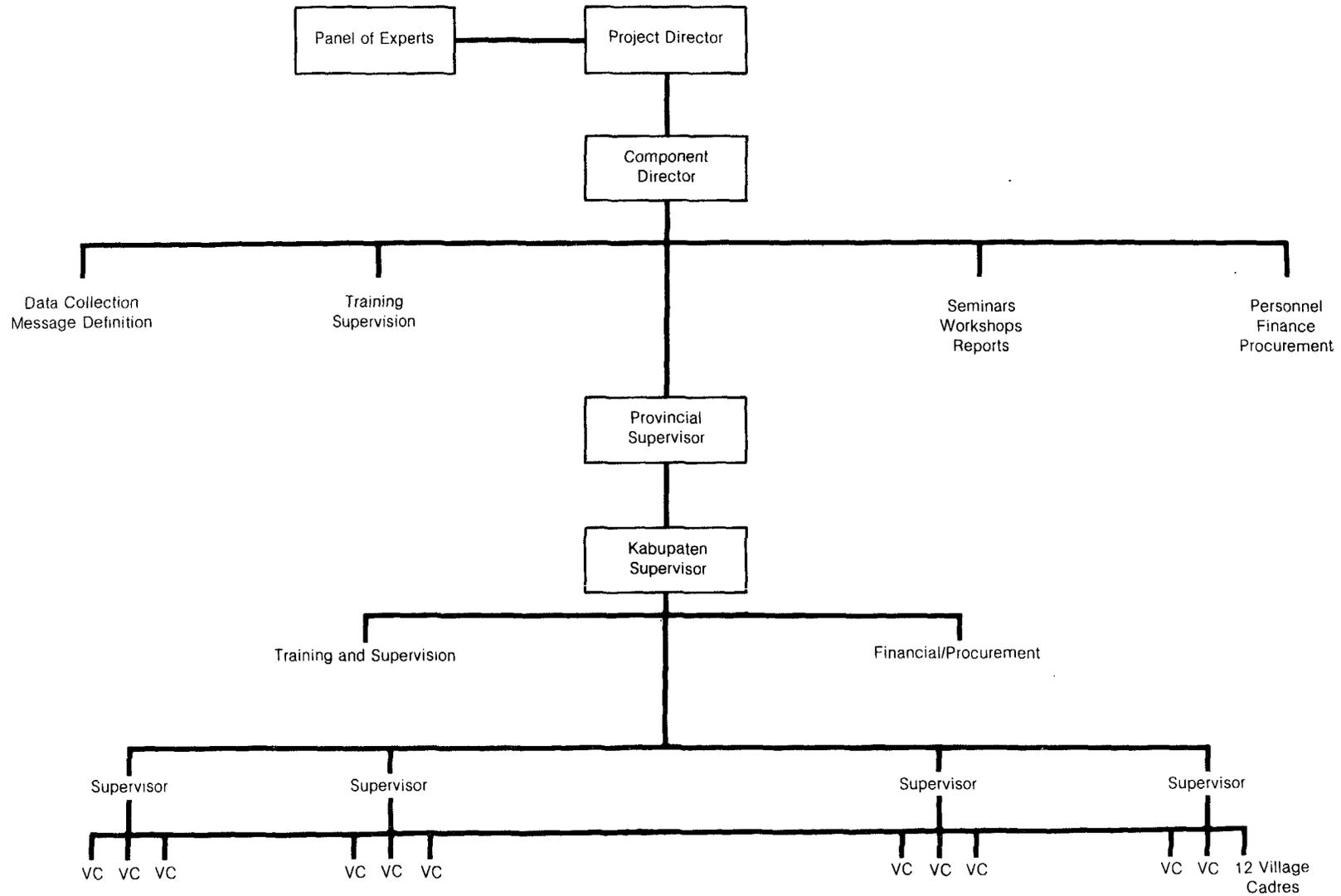
### Costs

17. The total costs amount to \$1,028,000 over a four-year period. Appendix 2 provides a statement of the expenditure; Appendix 3 provides details of salary support.

### Monitoring and Evaluation

18. The Director of the component would be responsible for monitoring project progress and would be advised of requirements by the Monitoring and Evaluation Unit at the Project headquarters. Evaluation is the essence of the component. CRDN would be responsible for baseline data and for subsequent surveys to evaluate changes in nutrition behavior.

**INDONESIA NUTRITION DEVELOPMENT PROJECT  
ORGANIZATION OF NUTRITION COMMUNICATION AND BEHAVIORAL CHANGE**





**INDONESIA NUTRITION DEVELOPMENT PROJECT**

Nutrition Communication and Behavioral Change - Expenditures

US\$ '000

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
1. <u>Equipment</u>							
(a) Vehicles	10	40			20	30	50
(b) Special Equipment	15	20			8	27	35
Sub-Total 1	25	60			28	57	85
2. <u>Technical Assistance</u>							
(a) Advisors	6	41	47	12	36	70	106
(b) Fellowships	10	10				20	20
Sub-Total 2	16	51	47	12	36	90	126
3. <u>Incremental Operating Costs</u>							
(a) Salaries	25	35	45	45	150		150
(b) Mass Media	20	25	25	30	80	20	100
(c) Educational Material	50	50	50	50	150	50	200
(d) Baseline Survey/Evaluation	5	5	5	7	22		22
(e) Training	15	30	30	20	95		95
(f) Travel and Per Diem	20	20	30	30	100		100
(g) Other Expenses	20	30	50	50	150		150
Sub-Total 3	155	195	235	232	747	70	817
Total Base Costs	196	306	282	244	811	217	1,028

INDONESIA NUTRITION DEVELOPMENT PROJECT

Nutrition Communication and Behavioral Change-Salary Support  
US\$

	Part-time or Full-time	Rate Per Month	Year				Total
			1	2	3	4	
Project Director	P.T.	75	900	900	900	900	3,600
HQ Staff 4 Officers	F.T.	250	12,000	12,000	12,000	12,000	48,000
Provincial Agent 3	P.T.	48	1,152	1,728	1,728	1,728	6,336
Kabupaten Agent 3	P.T.	30	720	1,080	1,080	1,080	3,960
Kabupaten Staff; 3x2	P.T.	25	1,200	1,800	1,800	1,800	6,600
Sub-District; 3 x 5	F.T.	30	3,600	5,400	5,400	5,400	19,800
<u>Ancillary Staff</u>							
National 2	P.T.	20	480	480	480	480	1,920
Provincial 1	P.T.	15	120	180	180	180	660
Kabupaten 1	P.T.	10	80	120	120	120	440
Sub-District 2	P.T.	8	64	96	96	96	352
Technicians 3 x 2	F.T.	200		14,400	14,400	14,400	43,200
Total			20,316	38,184	38,184	38,184	134,868

INDONESIA NUTRITION DEVELOPMENT PROJECT

Consultant Job Description

1. Behavioral Scientist/Nutrition Education Consultant

To provide advice to and assist the Director of the component on the following:

- a. define the data to be collected relating to food habits, patterns and beliefs;
- b. prepare the questionnaires in a form which facilitates analysis;
- c. train the field staff in data collection;
- d. analyze and interpret the results;
- e. advise on the approaches to be used in educational process and in conveying nutrition messages; and
- f. advise on the methods for evaluation of the component.

2. Communications Specialist

To provide advice to and assist the Director of the component in the following:

- a. development of an overall strategy of communications in nutrition information and education, using both existing and innovative techniques and materials;
- b. preparation of an operational plan for the communications component of the project;
- c. coordination of communications program in nutrition between the Ministry of Health, Ministry of Education, Information, Agriculture, etc.;
- d. integration of communications techniques in the training of nutritionists, assistant nutritionists and others involved in nutrition activities;
- e. design of training programs in nutrition education in collaboration with behavioral scientists/educators;

- f. preparation and execution of studies designed to test the effectiveness of some innovative mass media techniques and materials; and
- g. evaluation of the communications component of the project.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Manpower Training

Training for Nutritionists

1. The Academy of Nutrition is the main institution engaged in training nutritionists and dieticians 1/. Students start the course after 12 years basic education and graduate with a B.S. at the end of 3 years. Most of the graduates are employed by the Ministry of Health as community nutritionists in provinces and Kabupatens or as dietitians in the larger hospitals. Other institutions that offer nutrition courses as a major subject are the Teachers Colleges, but the output from these colleges is low due to limited teaching facilities. The Agricultural University of Bogor also offers courses in nutrition, but with emphasis on food technology rather than community nutrition.

2. The Second Five Year Development Plan (1974-79) makes provision for expansion of the nutrition staff in the Ministry of Health, to allow for five nutritionist in each of the country's 26 provinces and one for each of the 286 Kabupatens and urban districts. As far as possible, a dietitian would be posted to each of the 588 government hospitals. More of the additional manpower requirement would have to be trained by the Academy of Nutrition. With its present enrollment of 100 students a year and an average annual rate of 25 graduates, it would take the Academy, however, more than 25 years to meet the demand.

The Nutrition Manpower Component

3. Unless the output of nutritionists can be accelerated over the next 10 years, the Government's nutrition interventions would be severely constrained. Upgrading and expanding the Academy would permit doubling the present enrollment to 200 students by 1980 and an average yearly output of 60 graduates. This objective can be achieved by providing financing for:

- (a) increasing the full-time faculty to 24 2/ by providing fellowships;

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1/ Since 1951, it has produced 352 nutritionists, 198 females and 154 males. According to 1973 records, 77 percent of all graduates were employed. Lower level training of nutritionists is part of the training of health personnel in the provinces.

2/ The Academy has currently 39 teaching personnel, of whom only 14 are full-time faculty members, six with Master's degrees and eight with Bachelor's degrees, mainly from the Academy.

- (b) providing two additional teaching laboratories, an audio-visual room and a library together with appropriate facilities and equipment;
- (c) modifying the curriculum to make it relevant to the needs of Indonesia and the national nutrition program; and
- (d) providing annual scholarships to 24 outstanding students.

#### Staff Development

4. There is need to upgrade the existing staff while it continues to provide the ongoing training programs. The full development to a faculty of 24 1/ would require about ten years, but recruitment would start in the first year and a total staff of fourteen would be recruited during the four year period. For this purpose, fellowships would be provided for one staff member to take an M.S. in Indonesia, five staff members to take an M.S. abroad, and two staff members would be candidates for Ph.D. In addition, during years 2, 3 and 4, two persons per year would undergo training abroad on 6 month fellowships. In-service training would be provided to 12 teachers a year to keep them up to date with new developments.

5. The Academy would establish a recruitment and selection committee which would draw up criteria for selection and evaluation of prospective faculty members. Policies to ensure retention of faculty, especially those sent for training, would be formulated and enforced.

#### Curriculum

6. The implementation of Government's nutrition policy would require not only increased manpower for nutrition but also a reorientation of the job description of community nutritionists and consequential changes in the training curriculum. The job description of a community nutritionist would be to:

- (a) conduct nutrition counselling;
- (b) organize institutional feeding, where appropriate;
- (c) assist in planning nutrition action programs for groups and communities; and

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1/ One in Biochemistry; five in Food Science; six in Community Nutrition; six in Dietetics; three in Behavioural Sciences; and three in Management.

- (d) assist in collecting, analysing and interpreting data about nutritional status of communities; related agricultural and health activities; and sociological and economic factors of the population.

7. The Academy's curriculum is currently being re-examined and revised. Contacts since 1973, by the Academy with the Food Institute, East-West Center, Hawaii led to a technical assistance program in 1975. Continuing assistance will be provided to gear the curriculum to the changing job functions.

8. Under the new curriculum, first and second year students would be required to undertake annually two weeks of field work in villages. During the first year of study the emphasis could be on rural family life; the second year's work would be devoted to food production, marketing and processing. Third year students would undergo intensive field training for four months in institutions, village hospitals and health centers to gain experience in institutional feeding, nutrition surveys, and nutritional health and agricultural intervention programs aimed at improved nutritional status of communities. Towards the end of the field training period, students would receive intensive guidance to prepare them for work in the communities.

#### Scholarships

9. During 1950-1965 the Ministry of Health provided a subsidy for every student admitted to the Academy, which covered board, lodging and tuition. In 1965, when the Academy was moved from Bogor to Jakarta the Government discontinued this subsidy. As a result, recruitment became restricted to students who lived in the city and whose parents could afford to provide the necessary financial support. This brought a marked drop in student recruitment, since students from Jakarta were not attracted to work in the rural areas. It would be advantageous if recruitment could focus on those who have worked for two or three years in community development, agriculture, health or education in rural areas and who have shown talent and aptitude for work in rural communities. To encourage this, 24 scholarships would be offered each year so as to broaden and improve recruitment. On completion of the course there would be an obligation to work as a community nutritionist for a certain period.

#### Physical Facilities

10. The Nutrition Academy is part of a bigger complex for health training; lecture rooms are shared. The Academy's building is comparatively small in size and modestly equipped. The present teaching laboratories can accommodate groups of 24 students. Doubling the enrollment would require the provision of two further teaching laboratories. The library facilities are inadequate and a new library would be constructed with facilities attached for the preparation of audio-visual aids. Detailed equipment lists have been prepared and appear to be appropriate for the needs of the Academy.

11. Salaries for full-time staff at the Academy are according to the standards for educational institutions. In general, salaries are low and there are fewer fringe benefits compared with equivalent positions in ministries. To attract higher level staff there is need to provide greater rewards. In Jakarta, housing is a major problem, and a strong inducement to attract good staff would be a housing provision. Six modest houses would be built for this purpose.

#### Organization and Management

12. The Chairman, Center for Manpower Training, Ministry of Health, would have responsibility for the component. The Nutrition Academy would be under the administrative direction of the Director of the Academy, assisted by a Secretariat and the heads of three administrative departments - Instruction, Community Service and Research and Evaluation. In addition there would be five academic departments, each under a coordinator. The organization chart is in Appendix 1. Technical assistance will be provided for instruction in the preparation of simple teaching aids and in the use and maintenance of communications equipment to be used in the Nutrition Academy.

#### Training of Nutritionists of Other Levels

13. Assistant nutritionists and dieticians are trained at the Nutrition High School. Entry is after 9 years of basic education and the course last for three years.

14. The training of graduate and post-graduate levels of nutrition is the responsibility of the Ministry of Education. In that capacity, the School of Public Health, University of Indonesia, is developing an area of study on organization and administration of Community Nutrition. Key personnel in nutrition would be trained in this school. Eight of the eleven medical schools in Indonesia offer courses in nutrition. Coordination among these institutions would be established so that they could strengthen and complement each other and avoid duplication.

15. The training of higher level nutritionists necessary to staff the Center for Research and Development in Nutrition and the Food Technology Development Center would be the responsibility of the Ministry of Education (see Annexes 2 and 3 for detail).

#### Training for Agriculture Extension Staff

16. In order to improve the effectiveness of the agriculture extension staff in the field of nutrition, a provision would be made to provide for inclusion of nutrition and home gardens into the curricula of the agricultural high schools and the agricultural training and extension centers. Agreement has been reached with the Agency for Education, Training and Extension of the Ministry of Agriculture (supported through the Agricultural Research and Extension Project, Loan 1179-IND) to work out detailed

curricula. Also, agreement has been reached that training of extension workers specializing in home gardens in the NIPP areas will be undertaken through the Rural Extension Centers under the Directorate General for Food Crops Agriculture (assisted through the National Food Crops Extension Project, Loan 1267-IND).

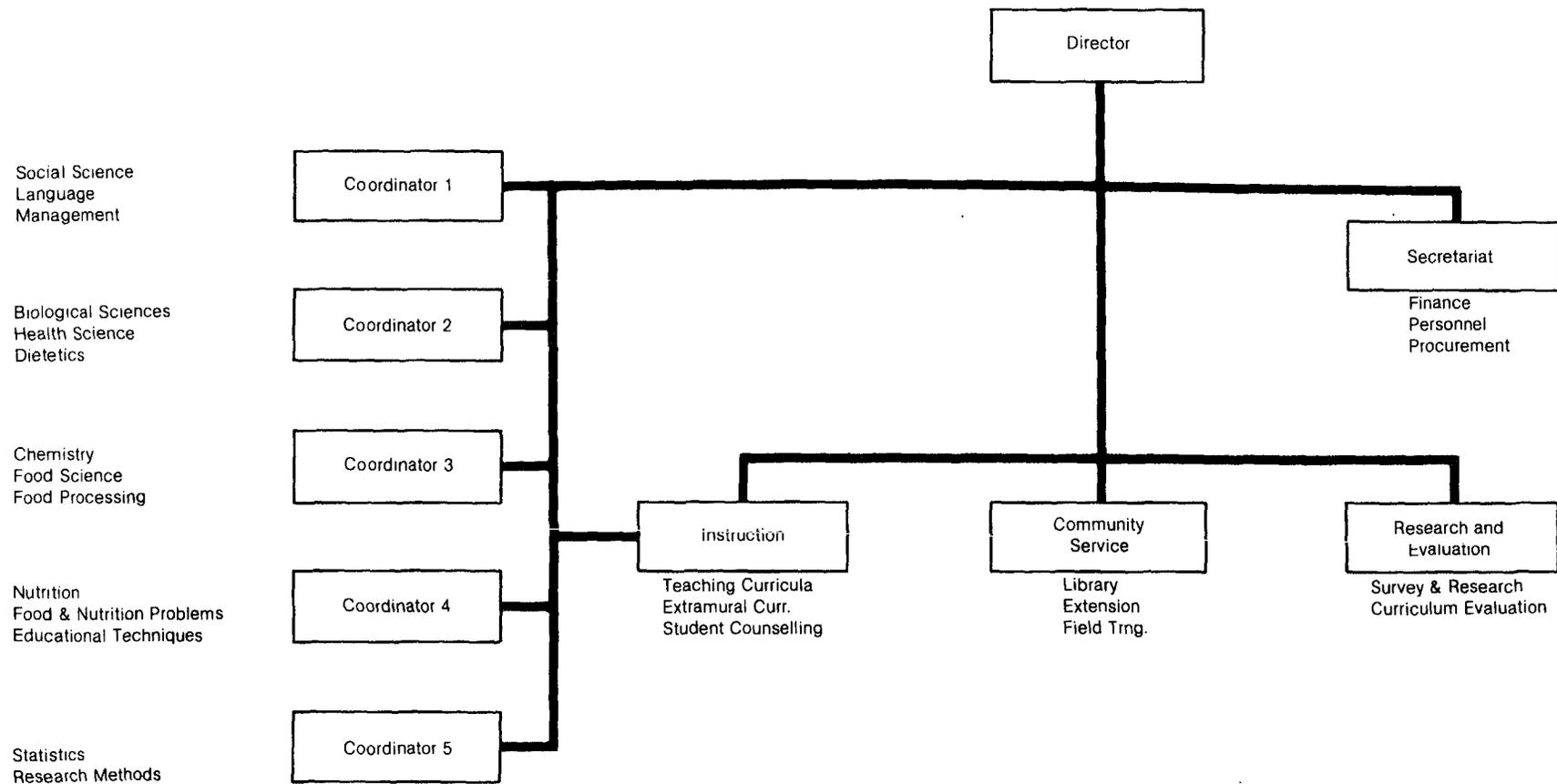
### Costs

17. With respect to the training for nutritionists the component would finance the costs of construction of additional physical facilities, furniture, equipment, fellowships for teachers and scholarships for students besides the incremental operating costs of the Academy of Nutrition. The total costs amount to US\$1,445,000. Costs of civil works are given in Annex 10 and a summary of all costs is given in Annex 11.

18. With respect to the training for agriculture extension staff, the component would finance only the incremental cost of the Agency for Education, Training and Extension and of the rural extension centers in order to expand their curricula to nutrition and home-garden training. The total costs amount to US\$259,000 essentially for curriculum development, equipment and recruitment of instructors.



**INDONESIA NUTRITION DEVELOPMENT PROJECT  
ORGANIZATION OF NUTRITION ACADEMY**





INDONESIA NUTRITION DEVELOPMENT PROJECTProject OrganizationNational Organization for Nutrition

1. Presidential Instruction No. 14 of 1974 established a Ministerial Committee of 10 Ministers, chaired by the Minister of State for People's Welfare and with the following Ministers as members: Economics, Health, Agriculture, Home Affairs, Information, Education, Religion, Industry and Finance. The Committee is responsible for coordinating and implementing a nutrition program on a national scale. A Technical Commission, chaired by the Deputy Chairman of BAPPENAS, has been established by decree to provide technical support to the Committee. Appendixes 1 and 2 includes the decrees and Appendix 3 provides a diagram of the national organization for nutrition.

Project Organization

2. The management of each project component would be carried out through existing organizational channels of the Government of Indonesia. The project as a whole would be coordinated by the Director General of Community Health in the Ministry of Health who would be Project Director (part-time). Three co-directors from the Ministries of Home Affairs, Education and Agriculture would work with the Project Director who would be primus inter pares. The organizational arrangements for implementation of each project component are discussed in detail in the respective Annexes. A Chart indicating the arrangements for coordination of the project is given in Appendix 4. The Project Director would be responsible for the coordination of all project components and for providing professional and administrative support to those directly responsible for implementation: the Directors of FTDC and CRDN, the National Coordinator for NIPP and the Chairman of the Bureau for the Center of Manpower and Training in the Ministry of Health. The Project Director would have responsibilities for making withdrawal requests to the Bank. The Project Director would review the project quarterly and ensure timely disbursements of local and foreign funds to implementing agencies. A chronogram for the project is presented in Annex 14.

3. The Project Director would also be responsible for providing semi-annual reports on the program progress to BAPPENAS, the Ministers of Health, Agriculture and People's Welfare, as well as to the Bank. Mid-term and final project evaluation reports would be provided by the Project Director to the planning groups in the Ministry of Health and in BAPPENAS, to the Technical Commission and to the Bank. He would maintain liaison at the national level with governmental and non-governmental agencies associated with the project and with BAPPENAS.

4. An Executive Secretary who would be a full-time project manager would assist the Project Director with the coordination and execution of the project. The Executive Secretary would be an Indonesian administrator, senior in status and experience. Assistance to the Executive Secretary would come from a Deputy Executive Secretary, a Finance and Procurement Officer, and an Administrator. Detailed job descriptions of these officers are in Appendix 5.

5. A Monitoring and Evaluation Unit to be located with the Project Director would consist of two full-time professionals who would be responsible for defining the criteria and indicators to be monitored, the methodology for data collection, the format for reporting data, and for the analysis and interpretation of the data. The results of the analysis would be reported through the Executive Secretary to the part-time Panel of Experts consisting of 5-7 persons, to be recruited from universities or other private or governmental institutions. These experts would assist the Project Director on evaluation of the project and coordination of the different components.

6. The Center for Research and Development in Nutrition (CRDN) and the components for nutrition education and nutritional manpower training fall under the Ministry of Health and would continue to be managed by the respective Directorates. The Food Technology Development Center (FTDC) which is part of the Agricultural University, Bogor (IPB) would be under the jurisdiction of the Ministry of Education. The NIPP component, which would be managed by a national coordinator in the Ministry of Health, would, at the Kabupaten level, be under the management of the Bupati (the chief executive of the Kabupaten) assisted by an Assistant Nutrition Program Officer. The Ministry of Interior has issued instructions directing all Governors of Provinces, Bupatis and Walikota (chief executive of sub-districts) to be responsible for coordinating the nutritional activities in their areas of jurisdiction.

7. It is essential that there should be close collaboration between CRDN and FTDC, but it is equally important that there should be coordination between the work of the two Centers and other research institutions in order that research programs can be more operational and have nutritional significance. The Agricultural Research and Development Organization (ARD) has been established to coordinate an integrated research program for agriculture. A Research Coordinating Committee would be established to facilitate this collaboration and coordination. The Directors of CRDN and FTDC would assume chairmanship of the Board in rotation. Membership would further consist of a professional representative from each of the organizations; a representative from ARD, BAPPENAS and a professionally qualified representative from each of the Ministries of Health, Agriculture and Industry; and a sociologist from IPB. In addition the Board would include a representative of the Directorate of Food Crops Extension so that the problems of implementation and extension would be brought to the notice of the research personnel.

8. During the first year of the project, the Committee would meet each quarter, but the number of meetings could be reduced to twice a year, when the Centers have become fully operational. The Committee's objectives would be:

- (a) to review the overall research programs of the Centers;
- (b) to review individual research proposals in order to ensure the setting of priorities, adequacy of research methodologies, the operational relevance and any need for collaboration with other Indonesian or foreign research institutions; and
- (c) to review the evaluation methodology for each research project.

Technical Assistance

9. The project provides US\$436,000 for consultants/advisors, both local and foreign, and for support to the Project Director. Included would be 84 man-months for a project management advisor, a planning consultant and procurement/financial management expert. Besides, 120 man-months of short-term local and foreign consultancies have been provided for assistance in drawing up the national food and nutrition program. Draft terms of reference for the long-term consultants have been attached (Appendix 7). Detailed terms of reference for the short-term consultants will be drawn up by the Project Director with respect to the needs of the project from time to time.

10. The project also provides US\$52,000 for fellowships to key personnel of the Project Director's Office and the Nutrition Unit in the Ministry of Agriculture. This is expected to cover the costs of travel and subsistence to neighboring countries as well as to international institutions of relevance, like INCAP in Guatemala, for five persons.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Project Organization

"UNOFFICIAL TRANSLATION"

PRESIDENT  
REPUBLIC OF INDONESIA  
PRESIDENTIAL INSTRUCTION OF REPUBLIC OF INDONESIA (INPRES)  
No. 14 of 1974  
CONCERNING THE  
IMPROVEMENT OF PEOPLE'S FOOD MENU

THE PRESIDENT OF REPUBLIC OF INDONESIA

- Considering:
- a. That in the context of promoting people's welfare, various efforts have to be taken toward the improvement of the people's menu by diversifying the kinds of the people's foods and by improving its nutritional quality as well as quantity;
  - b. that to implement these efforts, continuous coordination of activities is needed on national scale.
- Noting:
1. Article 4 para(1) 1945 Constitution.
  2. No. IV/MPR/1973 The People's Consultative Assembly-Decree concerning The Basic Guidelines for State Policy.
  3. Law No. 9 of 1960 concerning Basic Health.
  4. Presidential Decree No. 9 of 1973.
  5. Presidential Decree No. 43 of 1973 concerning the main duty of the State Minister of People's Welfare.

I N S T R U C T S

1. The Minister of State for People's Welfare;
2. The Minister of State for Economics, Finance and Industry/  
Chairman of BAPPENAS;
3. The Minister of Health;
4. The Minister of Agriculture;
5. The Minister of Home Affairs;
6. The Minister of Information;
7. The Minister of Education;
8. The Minister of Religion;
9. The Minister of Industry;
10. The Minister of Finance.

First

To execute the activities for the improvement of the people's menu on a national scale, within the framework of cooperation among departments/institutions, using the implementation guidance attached to this presidential instruction.

Second

- A. Especially for the Minister of State for People's Welfare: To coordinate the execution of activities for the improvement of the people's menu in line with Government policy.
- B. Especially for the Minister of Home Affairs: To charge Governors, Bupatis and Walikotaas, as heads of their respective regions, with the responsibility of coordinating the execution of activities aimed at the improvement of the people's menu in their respective regions, and to give technical guidance in line with Government policy.

Third

This instruction takes effect as of the date on which it is issued and shall be executed in the best possible way.

Decree in Jakarta  
on 13 September 1974

PRESIDENT OF REPUBLIC OF INDONESIA

(signed)

SOEHARTO

ATTACHMENT TO THE  
PRESIDENTIAL INSTRUCTION OF REPUBLIC OF INDONESIA  
No. 14 of 1974  
13 SEPTEMBER 1974

GUIDANCE FOR EXECUTING ACTIVITIES AIMED AT THE  
IMPROVEMENT OF PEOPLE'S MENU

1. Definition

The improvement of the people's menu means to diversify the kinds of people's food and to improve its nutritional quality as well as quantity, as an important effort in the national development to promote people's welfare, materially and spiritually.

2. Target

The national and comprehensive efforts for the improvement of the People's menu aims at all levels of society and at all regions.

3. Time

In the context of the execution of REPELITA II, the efforts for the improvement of the people's menu will be conducted continuously and are to be executed in the best possible way.

4. Execution

To make the efforts successful, there is a need for a variety of coordinated and nation-wide activities, followed by various departments. Institutions in the Economic and Social Sectors which functionally will organize and take part in the efforts to improve the people's menu by using their own structure and apparatus. The executive unit for the efforts to improve the people's menu is comprised as follows:

- a. Departments/Government institutions which will organize the activities and take part in the execution of the national programme for the improvement of people's menu.
- b. Associations/community organizations which voluntarily and independently will organize and take part in the execution of the national programme of improvement of the people's menu.

5. Task of the Executive Unit

1. To manage, adapt and develop the efforts for the improvement of the people's menu in line with government policy in their context and their function.

2. To present a periodic report of their activities to the Minister of State of People's Welfare through their Head of the Departments/Institutions, as a compulsory requirement.

6. Coordinating Meeting

Problems arising from the execution of activities for the improvement of the people's menu will be solved in the coordinating meeting, chaired by the Minister of State of People's Welfare and attended by Heads of the Departments/Government Institutions in the Economic and Social Sectors dealing with these problems.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Project Organization

Minister of State for People's Welfare

Decree of the Minister of State of People's Welfare  
No. 03/KEP/M/KESRA/II/1975  
concerning

Institution of a Technical Commission  
for People's Menu Improvement

The Minister of State for People's Welfare

- Considering:
1. That, as a realization of the Presidential Instruction No. 14, 1974, on Improvement of the People's Menu, it is considered necessary to develop and strengthen an effective co-operation with the various Departments concerned.
  2. That such co-operation calls for the existence of a complementary set of machinery in the form of an Inter-departmental Technical Commission;
- Noting:
1. The Presidential Instruction to the Limited Cabinet Session on 26 November 1974;
  2. Minutes of the National Working Conference on People's Menu Improvement on 22 July 1974;
  3. Minutes of the Meeting on Co-ordinated Implementation of the Presidential Instruction (INPRES) No. 14, 1974, on 20 November 1974;
  4. The appointment of a representative of each Department concerned, regarding membership in the Technical Commission;

Decides

To establish the Decree of the Minister of State for People's Welfare on the Institution of a Technical Commission for People's Menu Improvement.

Article I

1. The composition and the names of the appointed members of the Technical Commission for People's Menu Improvement, hereinafter referred to as Technical Commission, are indicated in the attachment to this Decree.
2. In case it is deemed necessary, membership in the Technical Commission could be expanded according to need.

Article II

The Technical Commission basically functions as follows:

- (a) To define various materials for the government policy formulation on people's menu improvement.
- (b) To prepare technical/operational guidelines on menu improvement required by various operational units/agencies in implementing their menu improvement programmes.
- (c) To develop and strengthen co-ordination in the technical sector among the various departments/agencies concerned with the implementation of the menu improvement programmes.
- (d) To make a technical evaluation of how the various menu improvement programmes are being implemented, and to prepare what favourable prospects could be presented to the meeting on co-ordination of ameliorative activities, as may be found necessary.
- (e) To study various technical suggestions/instructions/reports from different sources, national as well as international, for eventual submission as discussion material to the meeting on co-ordination of the people's menu improvement programmes.
- (f) To design basic guidelines for survey and education/training programme in the menu improvement sector.
- (g) To get in touch with agencies/officials in the context of data collection.

Article III

1. The Technical Commission Chairman could set up ad hoc committees to deal with specific problems, in line with the existing needs.
2. These sub-committees could seek assistance from experts of various departments/agencies.

Article IV

To ensure continuance in action as well as the menu improvement programme activities, periodic meetings would be convened at regular intervals or at any time, as may be found necessary, by the Technical Commission. This will be further arranged by the Chairman of the Technical Commission.

Article V

The Technical Commission shall be responsible to the Minister of State for People's Welfare in the fulfillment of its mission.

Article VI

This decree takes effect as of the date on which it is established. Should an error appear in this decree, an amendment shall be effected accordingly.

Established at: Jakarta  
Date: 12 February 1975

(Signed)

Soenawar Soekowati  
Minister of State for People's  
Welfare

Copies of this decree are  
forwarded to:

1. H.E. the President of the Republic of Indonesia
2. H.E. Vice-President of the Republic of Indonesia
3. All Ministers of the Development Cabinet

Minister of State for People's Welfare

Attachment to:

Decree of the Minister of State for People's Welfare

No. 03/KEP/M/KESRA/II/1975

on

Composition of Membership of the Technical Commission for  
People's Menu Improvement

- |     |  |   |                            |
|-----|--|---|----------------------------|
| 1.  | <u>Soejoto, S.H.</u><br>Deputy Chairman BAPPENAS                                       | - | Chairman cum Member        |
| 2.  | <u>Dr. Soepardan</u><br>Staff to Minister of State<br>for People's Welfare             | - | Deputy Chairmen cum Member |
| 3.  | <u>Hartono, B.Sc.</u>  | - | Secretary cum Member       |
| 4.  | <u>Dr. Soedarso</u><br>Department of Health  | - | Member                     |
| 5.  | <u>Dr. Malasan</u><br>Department of Health   | - | Member                     |
| 6.  | <u>Dr. Gatot Hadisantoso</u><br>Department of Social Affairs                           | - | Member                     |
| 7.  | <u>Dr. O. Djojohusodo</u><br>Dept. of Social Affairs                                   | - | Member                     |
| 8.  | <u>Dr. Dardjo Somaatmadja, Ph.D.</u><br>Department of Industries                       | - | Member                     |
| 9.  | <u>Dr. Suwadi Sinduredjo</u><br>Department of Agriculture                              | - | Member                     |
| 10. | <u>Dr. H. Bachroen Dipo</u><br>Department of Religious Affairs                         | - | Member                     |
| 11. | <u>Dr. H.A.R. Tilaar</u><br>BAPPENAS   | - | Member                     |
| 12. | <u>Dr. Suma'mur</u><br>Department of Manpower,<br>Transmigration & Cooperatives        | - | Member                     |
| 13. | <u>Dr. Asril Aini</u><br>Department of Manpower<br>Transmigration & Cooperatives       | - | Member                     |
| 14. | <u>Djoko Noeljono</u><br>Department of Trade   | - | Member                     |
| 15. | <u>Dr. Yunus A. Hamzah, M.A.</u><br>Staff to Minister of State<br>for People's Welfare | - | Member                     |
| 16. | <u>Subagio</u><br>Department of Information  | - | Member                     |
| 17. | <u>Prof. Dr. Achjani Atmakusuma</u><br>Department of Education & Culture               | - | Member                     |
| 18. | <u>Soetrisno Poerwodiredjo, S.H.</u><br>Department of Home Affairs                     | - | Member                     |

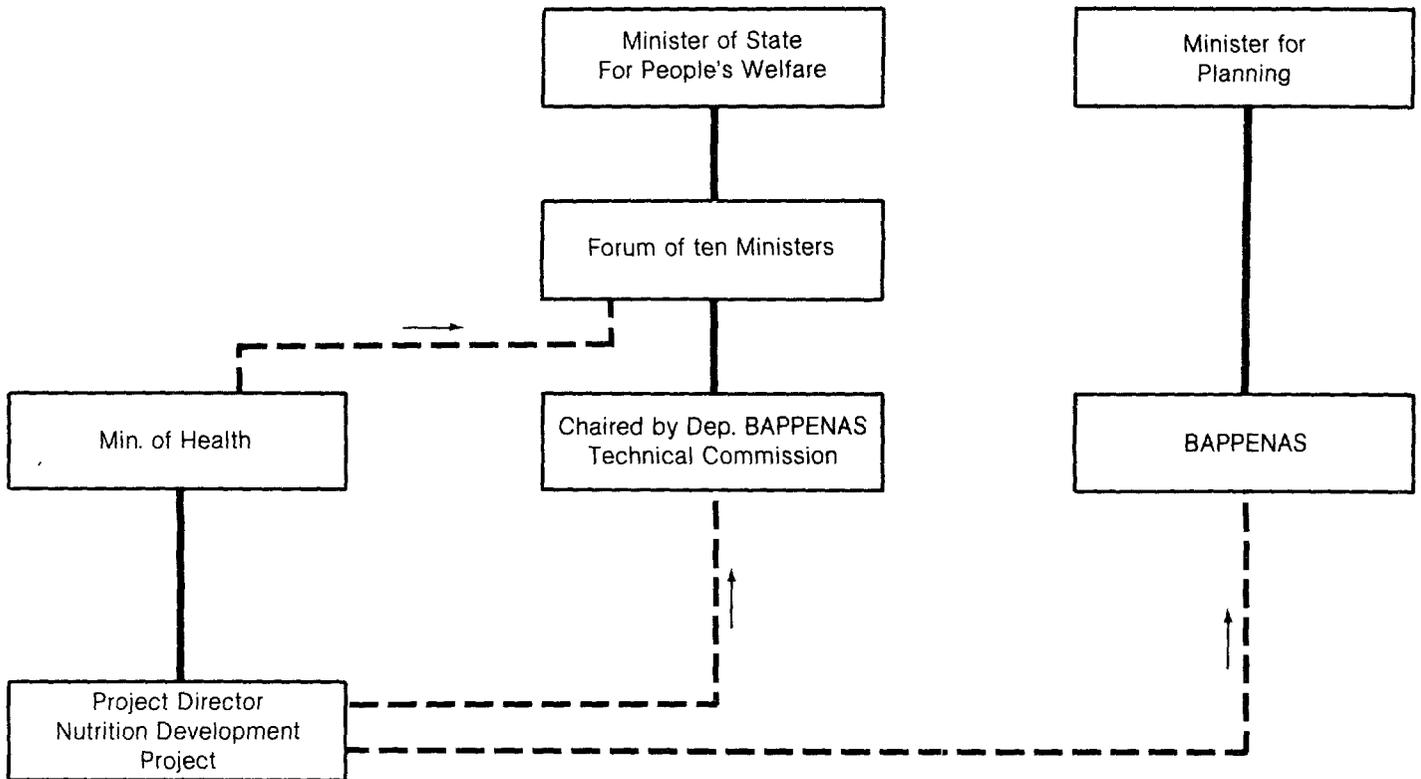
(Signed)

Soenawar Soekowati

Minister of State for People's Welfare

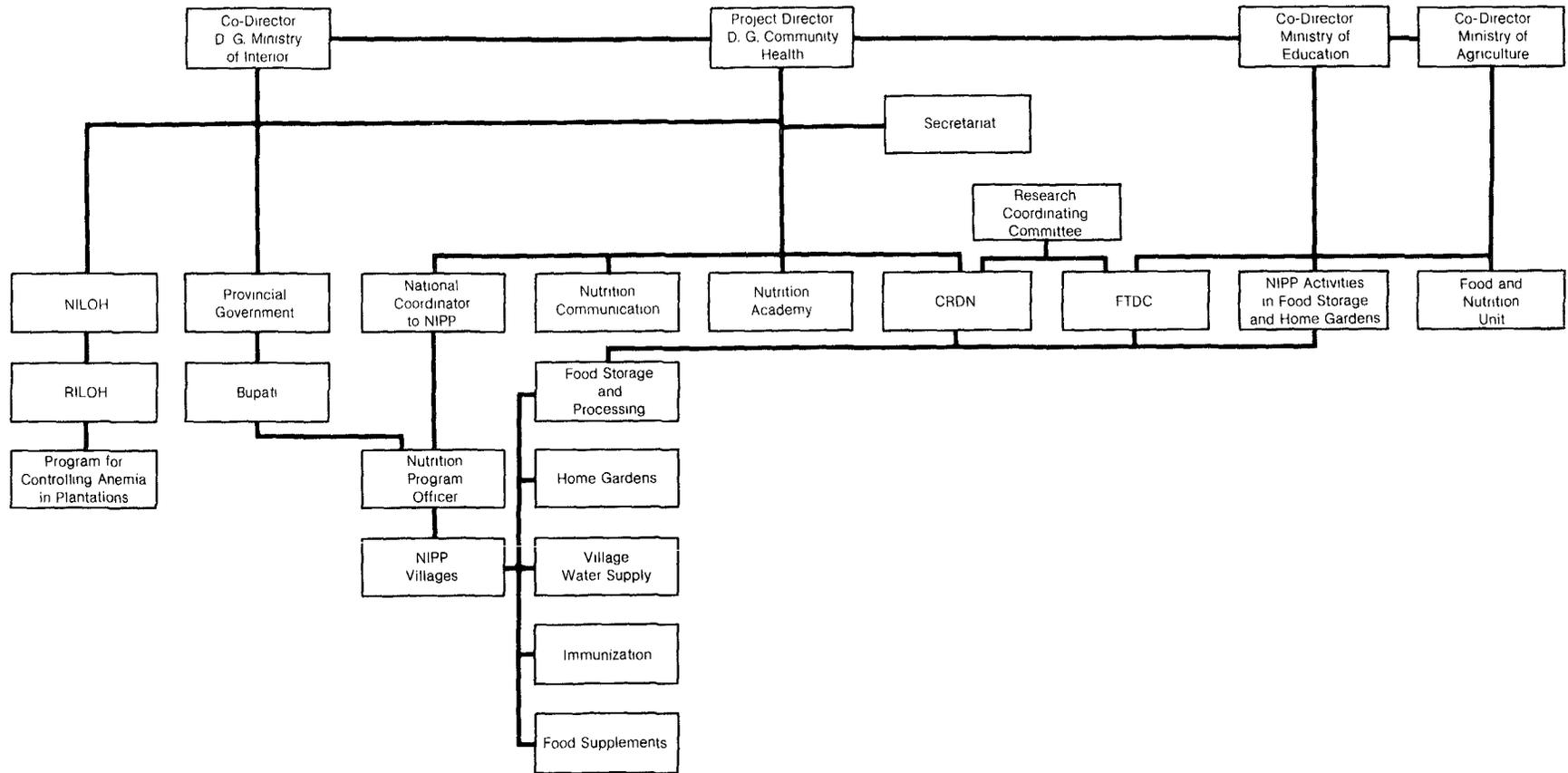


**INDONESIA NUTRITION DEVELOPMENT PROJECT  
NATIONAL ORGANIZATION FOR NUTRITION**





**INDONESIA NUTRITION DEVELOPMENT PROJECT  
PROJECT ORGANIZATION**





INDONESIA NUTRITION DEVELOPMENT PROJECT

Project Organization

Draft Terms of Reference for Staff of the Project Director

The Executive Secretary

Job Description

1. The Executive Secretary would be responsible to the Project Director for:

- (a) the coordination of the various components and being the normal channel of communication for conveying instructions from the Project Director;
- (b) the administration of the project, including office and personnel management, accounting and procurement;
- (c) the timely disbursement of funds to the implementing agencies;
- (d) convening monthly meetings of project officers to facilitate cooperation and communication between those responsible for components;
- (e) the consolidation of progress reports from project officers, the preparation of issues papers for referral to the Expert Advisory Committee and for drafting the semi-annual reports required by the Minister of Health, BAPPENAS, The Minister of State for People's Welfare and by the Bank.

Qualifications

2. The Executive Secretary would be a senior administrator, with at least 4 years previous experience in management and with a positive attitude towards the need for action to assist the nutritionally deprived. The coordinating role demands qualities of leadership and tact. The managerial functions would require meticulous attention to detail, while retaining understanding of the overall concept.

The Deputy Executive Secretary

Job Description

3. The Deputy Executive Secretary would be responsible to the Executive Secretary for:

- (a) continuing liaison with component project officers and their staffs; and with other relevant agencies;
- (b) identifying problems in any of the project components, arranging for speedy consideration of alternative solutions and the reaching of decisions on remedial measures;
- (c) identifying gaps in knowledge which hinder or inhibit implementation and referring such gaps in knowledge for further study or research.

4. In the absence of the Executive Secretary, the Deputy Executive Secretary would be responsible to the Project Director for the functions of the Executive Secretary. The Deputy Executive Secretary would travel, as necessary, to keep in touch with all aspects of the project.

Qualifications

5. The Deputy Executive Secretary would be a university graduate, of medium level seniority, with 2-3 years previous experience in management or administration. The Deputy Secretary should have facility for collaborating with others, an inquiring mind with quick perception and sound judgement and familiarity with potential resources for problem solving. The Deputy Secretary would require to be physically fit for extensive and arduous travel.

The Finance Officer

Job Description

6. The Finance Officer would be responsible to the Executive Secretary for:

- (a) ensuring that the Government's and Bank's requirements in regard to financial and procurement matters are met;
- (b) ensuring that appropriate accounting and auditing procedures are introduced, and adhered to, in consultation with the Bank;
- (c) coordinating the preparation of financial budgets of individual components;

- (d) preparing cash flows and estimates of expenditure for the project;
- (e) ensuring correct application for project funds;
- (f) reviewing the disbursement requests from the project officers of the components;
- (g) establishing a cost analysis and record keeping system for meaningful evaluation of cost effectiveness of individual or groups of intervention measures;
- (h) reporting to the Government and to the Bank on the financial outlays under the project.

Qualifications

7. A professionally qualified accountant with 4 years' experience at ministerial or departmental level in directing the accounting of sub-units; experience in the framing of estimates, control of expenditure, disbursement of funds and in working with high level government officials.

The Procurement Officer

Job Description

8. The Procurement Officer would be responsible to the Executive Secretary for:

- (a) ensuring correct procedures for inviting tenders, evaluating tenders and awarding contracts for civil works, vehicles, project stores and requisites;
- (b) arranging with each component for the physical control and checking of project stores;
- (c) arranging the general security for transport and warehousing.

Qualifications

9. The Procurement Officer should be qualified as a Stores Officer, with previous experience in evaluating tenders, procuring and controlling stores and equipment at least at departmental level, preferably with experience in the procurement procedures laid down by the Bank. If inexperienced in these procedures, there should be the aptitude to acquire knowledge of them.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Project Organization

Draft Terms of Reference for Advisors/Consultants to  
Assist the Project Director and the Nutrition Unit

Project Management Advisor

1. Indonesia's Nutrition Development Project would require the services of a Project Management Advisor for a period of two years to assist the Project Director and his staff in the organization and management of the project.
2. The Project Management Advisor would be a nutritionist with management experience or a development planner/economist with experience in planning and organizing multidisciplinary programs in the social sector, preferably with an orientation towards nutritional programs or a health planner with experience in nutrition project management. We would look for a person with integrative skills and a capacity to relate the project to the national program of development. Desirable qualifications would include experience in managing relationships with international organizations, as well as handling problems of interdisciplinary and multisectoral coordination.
3. The Project Management Advisor would assist the Project Director in:
  - (a) setting up the organizational structure and defining the roles in the Project Directorate vis-a-vis the project entities;
  - (b) developing the monitoring and evaluation unit, recruiting suitable local and foreign consultants for the unit and establishing the scope of the unit's work in relation to the project activities;
  - (c) assisting the Project Director and his executive secretary to plan, implement and monitor the development of the various components;
  - (d) formulating procedures to select consultants for the various project components,
  - (e) assisting in the work of preparation of budgets for and coordinating the allocation of funds for different project components, and
  - (f) assisting in the work of making withdrawal requests from the Bank.

TERMS OF REFERENCE FOR:

(a) Procurement Advisor

1. The Indonesia nutrition development project requires the services of an expert in managing the procurement of equipment for the various research facilities to be strengthened under the project.
2. The Procurement Advisor would have had three to five years experience in management of procurement of equipment and of evaluation of tenders for civil works in large-scale organizations. He would preferably have had experience in working with or in an international organization. Desirable qualifications would be that the person selected is by training an engineer or accountant with experience of managing work and accounting in research-oriented projects.
3. The Procurement Advisor would be recruited directly or through international or bilateral assistance under terms and conditions acceptable to the Bank to assist the Project Director and his staff in:
  - (a) ensuring, in consultation with the Resident Mission of the Bank, that procedures for the procurement of equipment and award of contracts under the project are compatible with those laid down in Bank guidelines and agreed to as part of the Project;
  - (b) establishing detailed operating procedures in such a way as to ensure that; (i) the best possible equipment is purchased and installed at the lowest possible cost to the borrower, (ii) enforceable maintenance arrangements are adequately spelled out in contracts with suppliers and (iii) adequate training is given to the local personnel in necessary maintenance procedures;
  - (c) assisting the Project Director and staff in ensuring that the necessary financial procedures are followed so that the Bank can disburse its loan amount to the Government against the category expeditiously; and
  - (d) laying out appropriate and feasible review procedures.

(b) Planning Consultants

1. The Indonesia Nutrition Development Project would require planning consultants to assist the Project Director. This is related to the requirement that the various tests, studies and evaluations in the project be utilized to help prepare a national food and nutrition program. Planning consultants would be required to work both in the Project Director's staff and in the Nutrition Unit of the Ministry of Agriculture.

2. The planning consultants would be drawn from among economists trained in analysis of food policy and nutrition-related issues and would have had experience in preparing plans and programs for developing countries or nutritionists with specific training in economic analysis and project/program evaluation.
3. The planning consultants in the Project Directorate would assist the Project Director and his staff in:
  - (a) drawing up the time phasing and nature of data and analysis for the project objective of drawing up a national food and nutrition program to be incorporated in the Third Development Plan;
  - (b) organizing and, where necessary, conducting studies in the specific areas necessary to develop the policy framework and program content for the plan; and
  - (c) drawing up periodic reports to the Monitoring and Evaluation Unit on the progress of the work.
4. The planning consultant in the Nutrition Unit of the Ministry of Agriculture will assist the Director of the Unit in:
  - (a) drawing up a program of work;
  - (b) organizing, in consultation with the Project Director's staff, studies in regard to the nutritional consequences of agricultural policies; and
  - (c) evolving a food and nutrition policy for consideration of the head of the unit and for transmission to the Project Director.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Food and Nutrition Unit: Ministry of Agriculture

1. Decree No. 270 of the Ministry of Agriculture, dated March 27, 1969, established a Food and Nutrition Unit (FNU) in the Ministry under the supervision of the Bureau of Planning, Secretary-General's office but directly responsible to the Minister. The objectives of the decree were that: the FNU would advise the Ministry on actions to increase the production of foods, improvement in the quality of diets for all people, but especially for farmers and on the implementation of a policy for food production and utilization. The FNU would be the Ministry's agency for coordinating its nutritional activities with those of other ministries. In particular, the FNU would study the effects of economic and social factors on human food consumption.
2. Under Decree No. 169, dated April 21, 1975, a team was appointed to carry out the work of the FNU. It consists of 12 senior part-time officers of various departments of the Ministry of Agriculture. However, the Unit lacks the basic prerequisites of trained manpower to carry out its task effectively.
3. Recognizing the important role which the Ministry of Agriculture could assume in Indonesia's nutrition program, the Government wishes to strengthen the FNU, so that it would become an important factor in introducing nutritional aspects into agricultural policies and planning. To ensure this, the FNU would require not only additional allocation of resources in terms of manpower and funds, but also proper integration within the administrative structure of the Ministry of Agriculture. This integration will be required to ensure proper coordination of FNU's nutrition actions vis-a-vis the production oriented Directorates General of food crops, estates, livestock and fisheries, and agencies such as the FTDC and CRDN.
4. The primary objective of this component would be to strengthen the FNU and to establish the organizational structure and links, both within and outside the Ministry of Agriculture, required to enable the FNU to advise the Ministry on the nutritional consequences of current and future agricultural policies and programs.
5. The project provides for about 24 man-months of short-term technical assistance to help in strengthening the FNU and to assist it in in-service training and work implementation. The terms of reference for a nutritional planner, food economist and data analyst are given in Appendix 1. To build up the staff of the FNU, the project also provides 72 man-months of fellowships for specialized M.S. training abroad in economics/nutrition, community nutrition and agricultural economics/nutrition. These fellowships will be allocated by the Project Director in consultation with the Co-director of the Ministry of Agriculture.
6. The total base costs of this component would be US\$180,000.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Terms of Reference for Consultants

Nutrition Planner

1. Needed qualifications are a University degree in agricultural economics and experience in the analysis of nutritional problems and the formulation and implementation of nutritional policies and programs. The nutritional planner will be responsible, in close association with the Chief of the FNU, for supervising the total work program and its implementation. Specifically he will assist the FNU in:

- (a) assessing administrative, financial and manpower requirements for an operational FNU and in formulating a concrete proposal for implementation;
- (b) assessing and strengthening the links between the FNU and the various Directorates General of the Ministry of Agriculture, ARD and AETE.
- (c) evaluating the food and nutritional aspects of ongoing or planned agricultural policies and projects; and
- (d) formulating and implementing in-service training.

Nutritional Economist

2. Needed qualifications are a University degree in economics with experience in analysing and evaluating economic/agricultural data relevant to nutritional planning. The nutritional economist in close association with the Chief of the FNU will be responsible for developing a methodology to collect agricultural and economic data relevant to nutritional aspects of agricultural project and policy formulation.

Data Analyst

3. Extensive knowledge and experience in assessing and analyzing nutritional statistics (food production, food availability, nutritional status) and in the formulation of analytical systems for collection, interpretation and evaluation.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Monitoring and Evaluation

Purposes

1. There are three aspects to monitoring and evaluation of the Indonesia Nutrition Development Project. The first is the monitoring function that provides timely information to the project management concerning the progress of the project and the relative effectiveness with which project inputs are utilized. This function would include an ongoing evaluation of project impact with reference to specific project goals. Second is the evaluation comprised in the test components of the project. This would, for instance, include the study of the effectiveness of different combinations of interventions and the efficiency of delivery systems in the NIPP area, the cost effectiveness of improved storage methods and processing, and the impact of various methods of nutrition education for behavioral change. Third is nutrition program evaluation, involving policy-oriented studies that utilize results of the project and specially designed research efforts to assess the direction in which the project and the nutrition program are going and to suggest ways of improvement. It will also be aimed at determining measures or groups of measures best suited for bringing about improvement in the nutritional status of the population, leading to development of the national nutrition program.

Information to be Collected

2. The Monitoring Function - Monitoring of the project progress has to be done through carefully designed reports on physical progress, expenditure and effects in relation to goals. The manager of each component activity will be responsible for monitoring the progress of the components and submitting reports at quarterly intervals to the Project Director through the Executive Secretary. The reporting system will be so designed as to provide information on the following key-indicators:

- (a) the degree to which professional and administrative staffing levels meet project schedules;
- (b) detail of fellowships and in-service training programs, giving numbers of staff participating and the quality and appropriateness of the educational and training programs;
- (c) the provision of technical services such as long-term and short-term consultants;

- (d) the progress of civil works construction at CRDN, FTDC and the Nutrition Academy in accordance with projected implementation timetables;
- (e) equipping of laboratories and field facilities to ensure that they become operational within projected time-limits; and
- (f) progress of nutrition and nutrition-related activities in NIPP villages and plantations in accordance with plans of operation.

3. The evaluation of research programs would be designed to provide the information on which future program emphasis would be determined. In research projects key indicators cannot easily be pre-determined, but would be chosen for each research project as it develops. Basic areas for choice of indicators would reflect: the goals of the particular research project; methods of analysis; the interpretation of experimental data; the presentations of meaningful progress reports; the testing and demonstration of results; and the degree of success achieved in the dissemination and adoption of new techniques. The Research Coordinating Committee would review the research programs. Before giving approval to a proposed research project, the Committee would review the choice of indicators for evaluation. The progress reports on research projects, submitted to the Research Coordinating Committee of Directors for its consideration, would include information on all designated evaluation criteria. Ongoing evaluation as part of monitoring reports will be carried out, with the assistance of consultants where necessary, under the direction of the monitoring and evaluation staff of the Executive Secretary.

4. Evaluation of Tests - A few components of the project seek to evaluate the effectiveness of different methods of nutrition interventions, separately and in combination. In the NIPP component, the objective is to determine the effectiveness, together with costs, of the proposed program of nutrition, health and other activities for achieving a reduction in morbidity and mortality and improving nutritional status. NIPP would also help determine the relative cost-effectiveness of these activities in combination as compared to when they are taken up separately. The CRDN would be responsible for this evaluation. This would involve a carefully designed base-line survey of a sample population in the selected Kabupatens prior to operational action. The survey would cover such parameters as morbidity, infant mortality, anthropometric measurements and biochemical determinations. After NIPP has been in operation for 18 months, a survey using the same parameters would be repeated and again at the end of the project period. For each of the NIPP villages as well as in the control villages the mid-term and final results would be compared with the base-line data. The findings would be analysed according to the different combinations of interventions. The CRDN would be responsible for the technical design of the survey,

including the statistical frame, the methodology for data collection, the questionnaire design and the analysis of results. Data collection would be carried out by the village cadres or other trained staff, under the technical supervision of a team from CRDN. Provision has been made under technical assistance for design of the survey and analysis of results. Results from the nutrition education component would be evaluated by a team of experts under the direction of the Chairman for Manpower Training, with assistance from CRDN on the nutritional aspects and from sociologists from IPB on the Knowledge-Attitude-Practice tests. 1/ The Food Technology Development Center would be in charge of evaluating the cost-effectiveness of different methods of improved food storage and processing.

5. In the Anemia Control and Prevention Program on Plantations, the project would seek to evaluate the effectiveness of delivery systems for iron supplementation on large and small plantations. CRDN and the NILHOH would work on the scientific and technical strength of the component, but CRDN would be in charge of the baseline survey and final evaluation of the labor productivity and effectiveness of delivery systems.

6. Program Evaluation - Various program oriented studies would be carried out as part of the project, by consultants drawn from a part-time panel of experts from universities, the CRDN and the FTDC. These studies will be funded as part of the project and organized by the Monitoring and Evaluation Unit under the Project Director. Studies with respect to NIPP would focus on:

- (a) the operational efficiency of the delivery system with reference to the extent to which the delivered food reaches the target groups;
- (b) the degree of reliability of the proposed system of identification of target beneficiaries;
- (c) the effectiveness of the administrative checks and balances to reduce abuses; and
- (d) the extent to which costs can be reduced by appropriate choice of foods, delivery system and community participation.

The primary focus of these studies would be on:

- (a) nutritional effects of agricultural and general economic policy changes;

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1/ Standard K.A.P. tests, as used in sociological studies, would be adapted for evaluating behavioural changes relating to nutritional knowledge and practice.

- (b) nutritional norms and levels of poverty in different regions and urban/rural groups;
- (c) relationships between nutrition and productivity in organized industry, farm labor, and small farms;
- (d) effect of nutrition education through mass media such as films, radio and the press;
- (e) cost-effectiveness and nutritional relevance of policies encouraging increased production of cereals vs. tubers such as cassava/sweet potatoes in certain areas of Indonesia; and
- (f) relationship between better health and nutrition, reduction in infant mortality and fertility.

These studies would be utilized by the planning staff of the Directorate of Nutrition of the Ministry of Health as well as the Food and Nutrition Unit of the Ministry of Agriculture in the preparation of the national food and nutrition program for inclusion in the Third Development Plan.

#### Organization and Staffing for Monitoring and Evaluation

7. The Monitoring and Evaluation Unit which would consist of two professionals with support staff would also draw on the services of consultants. The unit would report through the Executive Secretary to the Project Director. The unit would be responsible for:

- (a) designing the format of and reviewing the monitoring reports and returns;
- (b) organizing special studies through consultants;
- (c) arranging for verification, on a sample basis, of data reported; and
- (d) advising the Project Director on the state of progress and effectiveness of the project.

The staff for monitoring and evaluation functions performed by CRDN and FTDC are detailed in the respective Annexes.

#### The Costs of Monitoring and Evaluation

8. The project provides for US\$250,000 for studies in addition to the cost of the Monitoring and Evaluation Unit and the related staff in various research components. The total cost of monitoring and evaluation in the project is estimated to be around US\$592,000.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Flow of Data and Analysis for Monitoring and Evaluation

	<u>Monitoring of Project Progress</u>	<u>Nutritional Status</u>	<u>Effectiveness of Nutritional Interventions</u>
<u>Examples of Data</u>	Progress of construction, procurement of equipment, staffing, training arrangements	Height, weight, arm circumference, vitamin A levels, hemoglobin levels	Gain of weight by children, reduction in morbidity, infant mortality, number needing supplementation.
<u>Frequency of Collection</u>	Quarterly/monthly for some items	Baseline Data Midterm Final	Monthly
<u>Responsibility for Design of Sample Questionnaire, if any</u>		CRDN	CRDN/National Coordinator of NIPP.
<u>Staff Collecting Data</u>	Civil works staff/staff of the research entity(CRDN, FTDC)/field staff of NIPP.	Specially trained enumerators.	NIPP's field staff.
<u>To Whom Data to be Reported</u>	Director of the Component/National Coordinator NIPP	CRDN	CRDN through National Coordinator for NIPP
<u>Responsibility for Analysis and Evaluation</u>			
<u>First Level</u>	Director of Component/National Coordinator of NIPP	CRDN/NPO	CRDN
<u>Second Level</u>	M&E Unit	MEU/Project Director	Project Director
<u>Third Level</u>	Project Director		

INDONESIA NUTRITION DEVELOPMENT PROJECT

Civil Works

Planning

1. The building designs are well advanced and all preliminary plans have been completed. The drawings were prepared by local architectural consultants engaged by the Government and under the guidance of a small task force, headed by the Chief Engineer, Ministry of Health and representatives from other client agencies. This task force has worked well and should be retained during the preparation of detailed drawings and construction to ensure uniformity in standards.

Estimates

2. All estimates of costs quoted in the Appendices are based on costs in Indonesia as of June 1976. These estimates allow for adequate standards of finish for research laboratories and food processing buildings. The equipment for the buildings has been included under the category of scientific equipment and, therefore, is excluded from these estimates.

Control

3. The civil works component of the project will be implemented by the works section of the Ministry of Health.

Sites

4. All sites for buildings have been selected and appear to be suitable. Surveys and site engineering tests on each site would be undertaken before designs are finalized.

Professional Services

5. The works section of the Ministry of Health will require assistance for architectural services. The Government has retained consultants, who have prepared preliminary drawings for all buildings. They would continue to be retained for the preparation of detailed drawings, specifications and to oversee the work to final completion.

6. Particular importance is attached to achieve standards of finish suitable for research laboratory work and adequate accommodation for the equipment and plant. The specifications reflect this requirement and the site supervision must ensure that these standard of finish are met. It has been agreed that a resident engineer of the Ministry of Works would be stationed at Bogor to supervise the work on CRDN and assist in supervision of civil works of FTDC.

Construction

7. The civil works component would be implemented through normal government channels using established government procedures and documentation, in respect of the following:

- (a) works procedures through bidding, construction, supervision to final acceptance of completed building, including contract control and responsibility for supervision, both general and on-site supervision. In particular the method of pre-qualifying bidders and the systems for bidding, bid evaluation and award would follow standard Ministry of Work procedures;
- (b) general conditions of contract;
- (c) standard bidding documents; and
- (d) standard form of contract agreement.

8. All contracts for construction in excess of US\$1 million would be awarded on the basis of international competitive bidding in accordance with the Bank's guidelines.

Procurement of Furniture

9. Contracts for the procurement of furniture below US\$50,000 would be in accordance with local competitive bidding procedures.

INDONESIA NUTRITION DEVELOPMENT PROJECT

Schedule of Civil Works - Locations and Accommodation

- A. Center for Research and Development in Nutrition: Jalan Samboja, Bogor
- (a) Wing I - Food Sciences Laboratories - Total Area 820 m<sup>2</sup>  
Includes: Animal Rooms & Laboratory; Instrument Center;  
Food Toxicology and Food Micro-Biology  
Laboratories.
- (b) Wing II - Biochemistry Laboratories - Total Area 1,100 m<sup>2</sup>  
Includes: Biochemical, Haematology and Anthropometric  
Laboratories; and Cafeteria
- (c) Wing III - Library and Auditorium - Total Area 1,330 m<sup>2</sup>  
Includes: Book Stack, Reading and Printing Rooms;  
Workshop; Auditorium with Stage; and  
Administrative Offices.
- (d) Renovations to Existing Buildings - Total Area 2,200 m<sup>2</sup>  
Includes: Laboratories for Community Nutrition.
- (e) Dormitories for 32 persons - Total Area 575 m<sup>2</sup>
- (f) 14 Staff Houses  
Includes: 12 houses each with an area of 120 m<sup>2</sup>  
2 houses each with an area of 250 m<sup>2</sup>
- (g) Site Infrastructure Work  
Includes: Power House and Emergency Power; Fencing;  
Roads and Parking Areas; 4.50 meter Bridge  
over the river.

B. Food Technology Development Center: Agricultural University, Bogor

- (a) Administrative Building - Total Area 582 m<sup>2</sup>  
Includes: Administrative Offices; Seminar Room;  
Conference Room and Library.
- (b) Food Research Laboratories - Total Area 1,224 m<sup>2</sup>  
Includes: Microbiology, Chemical/Biochemical and  
Physical Laboratories; Experimental  
Cookery; Culture Collection, Chromatography;  
Incubation; Workshops and Storerooms.
- (c) Pilot Plant - Total Area 1,294 m<sup>2</sup>  
Includes: Food Processing Plant and Machinery;  
Packaging Room; Boiler House; Laboratory;  
Smokehouse, Storerooms; Workshops; and  
Administration.
- (d) Utility Building - Total Area 270 m<sup>2</sup>  
Includes: Quality Control; Generator; Transformer;  
Bicycle Shed; Store and Garage.
- (e) Site Infrastructure Work  
Includes: Guard House; Fencing; Roads and Parking  
Areas; Transformer and Generator; Water  
Tower and Covered Ways.
- (f) Staff Housing  
Includes: 10 houses each with an area of 120 m<sup>2</sup>  
2 Houses each with an area of 250 m<sup>2</sup>

C. Nutrition Academy - Blok F, Kebayoran Baru, Jakarta

- (a) Food Laboratories - Total Area 284 m<sup>2</sup>  
Includes: Food Technology and Food Chemistry  
Laboratories; Balance Room; Workshop  
and Store.
- (b) Library and Audio Visual Room - Total Area 362 m<sup>2</sup>  
Includes: Library; Audio Visual Room; Display  
Hall; Store and Toilets.
- (c) Site Infrastructure Work  
Includes: Roads and Paths; Standby Generator and  
Power House; Water Supply Pump.
- (d) Staff Housing  
Includes: 6 Houses each with an area of 120 m<sup>2</sup>  
Roads and Power Supply.

INDONESIA NUTRITION DEVELOPMENT PROJECT  
(Rps '000)

Civil Works-Construction<sup>1/</sup>

Center for Research and Development in Nutrition

Food Laboratories	82,000
Biochemistry Laboratories	110,000
Library and Auditorium	119,700
Renovation of Existing Buildings	91,000
Dormitory	46,000
Installations	208,500
Staff Housing (14 houses)	126,100
Site Infrastructure	194,800
Professional Fees	87,800
Contingencies Including Price Escalation	<u>126,395</u>
Total	<u>1,192,295</u>

Food Technology Development Center

Food Research Laboratories	122,400
Pilot Plant	122,930
Utility Buildings	13,500
Administration Buildings	46,560
Installations	148,500
Staff Housing	155,850
Site Infrastructure	85,000
Professional Fees	70,000
Contingencies Including Price Escalation	<u>108,835</u>
Total	<u>873,575</u>

Nutrition Academy

Food Laboratories	25,560
Library and Audio Visual Room	32,580
Installations	11,900
Staff Housing and Site Infrastructure	63,500
Professional Fees	13,350
Contingencies Including Price Escalation	<u>30,730</u>
Total	<u>177,620</u>

1/ Unit Costs

Costs per m<sup>2</sup>

Laboratories	Rps 90,000 to 100,000
Utility Buildings	50,000
Other Buildings - Administrative	80,000



INDONESIA NUTRITION DEVELOPMENT PROJECT

Project Cost Estimates

Center for Research and Development in Nutrition

US\$ '000

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
A. <u>Civil Works</u>							
1 Construction	386	1,150	1,337		1,724	1,149	2,873
2 Furniture and Equipment		121	151		272		272
Sub-Total A	386	1,271	1,488		1,996	1,149	3,145
B. <u>Non-Construction</u>							
1 <u>Equipment</u>							
a. Vehicles	20	75	70		15	150	165
b. Special Equipment		100	305	208	62	551	613
Sub-Total B1	20	175	375	208	77	701	778
2 <u>Technical Assistance</u>							
a. Advisors/Consultants	35	35	35	35		140	140
b. Fellowships	86	95	93	74	57	291	348
Sub-Total B2	121	130	128	109	57	431	488
3 <u>Incremental Operating Costs</u>							
a. Salaries	100	200	250	250	800	-	800
b. Books and Journals	50	50	50	50	25	175	200
c. Other Costs	50	50	150	200	425	25	450
Sub-Total B3	200	300	450	500	1,250	200	1,450
Sub-Total B	341	605	953	817	1,384	1,332	2,716
TOTAL BASE COSTS (A+B)	727	1,876	2,441	817	3,380	2,481	5,861

INDONESIA NUTRITION DEVELOPMENT PROJECT

Project Cost Estimates

Food Technology Development Center

US\$ '000

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
A. <u>Civil Works</u>							
1 Construction	210	700	1,195		1,263	842	2,105
2 Furniture		30	43		73		73
Sub-Total A	210	730	1,238		1,336	842	2,178
B. <u>Non-Construction</u>							
1 <u>Equipment</u>							
a. Vehicles		20	26		4	42	46
b. Special Equipment	100	300	1,000	200	160	1,440	1,600
Sub-Total B1	100	320	1,026	200	164	1,482	1,646
2 <u>Technical Assistance</u>							
a. Advisors/Consultants	49	108	166	111	26	408	434
b. Fellowships	75	101	71	40	135	152	287
Sub-Total B2	124	209	237	151	161	560	721
3 <u>Incremental Operating Costs</u>							
a. Salaries	25	46	133	176	380	-	380
b. Books and Journals	10	40	50			100	100
c. Other Costs	25	125	150	200	400	100	500
Sub-Total B3	60	211	333	376	780	200	980
Sub-Total B	284	740	1,596	727	1,105	2,242	3,347
TOTAL BASE-COSTS (A+B)	494	1,470	2,834	727	2,441	3,084	5,525

INDONESIA NUTRITION DEVELOPMENT PROJECT

Project Cost Estimates

Nutrition Intervention Pilot Project in Rural Areas

US\$ '000

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
A. <u>Civil Works</u>							
1. Construction of village } nutrition centers }		11	23	54	70	18	88
B. <u>Non-Construction</u>							
1. <u>Equipment</u>							
a. Vehicles	57	58	90		40	165	205
b. Special equipment	31	47	78		56	100	156
Sub-Total B(1)	88	105	168		96	265	361
2. <u>Technical Assistance</u>							
a. Consultants	50	75	75		60	140	200
b. Fellowships	10	12				22	22
Sub-Total B(2)	60	87	75		60	162	222
3. <u>Food Supplement</u>		26	85	196	307		307
4. <u>Operating Costs</u>							
a. Salary support	11	35	87	170	303	-	303
b. Nutrition education	32	38	75	75	220	-	220
c. Health activities		18	52	102	37	135	172
d. Workshops/seminar	15	20	25	15	75	-	75
e. Transport/travel	18	20	60	72	153	17	170
f. Evaluation	20	30	85	85	220	-	220
g. Training	30	87	185	57	359	-	359
h. Other expenses	15	15	20	40	90	-	90
Sub-Total B(4)	141	263	589	616	1,457	152	1,609
Sub-Total B	289	481	917	812	1,920	579	2,499
<u>Total Base Costs (A+B)</u>	289	492	940	866	1,990	597	2,587

INDONESIA NUTRITION DEVELOPMENT PROJECT

Project Cost Estimates

Nutrition Communication and Behavioral Change

US\$ '000

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
1. <u>Equipment</u>							
(a) Vehicles	10	40			20	30	50
(b) Special Equipment	15	20			8	27	35
Sub-Total 1	25	60			28	57	85
2. <u>Technical Assistance</u>							
(a) Advisors	6	41	47	12	36	70	106
(b) Fellowships	10	10				20	20
Sub-Total 2	16	51	47	12	36	90	126
3. <u>Incremental Operating Costs</u>							
(a) Salaries	25	35	45	45	150		150
(b) Mass Media	20	25	25	30	80	20	100
(c) Educational Material	50	50	50	50	150	50	200
(d) Baseline Survey/Evaluation	5	5	5	7	22		22
(e) Training	15	30	30	20	95		75
(f) Travel and Per Diem	20	20	30	30	100		100
(g) Other Expenses	20	30	50	50	150		150
Sub-Total 3	155	195	235	232	747	70	817
Total Base Costs (1+2+3)	196	306	282	244	811	217	1,028

INDONESIA NUTRITION DEVELOPMENT PROJECT

Project Cost Estimates

Manpower Training  
US\$ '000

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
<b>I. <u>Nutrition Academy</u></b>							
<b>A. <u>Civil Works</u></b>							
1 Construction	50	280	98		257	171	428
2 Furniture		36	40		76		76
Sub-Total A	50	316	138		333	171	504
<b>B. <u>Non-Construction</u></b>							
1 <u>Equipment</u>							
a. Vehicles	20	26			13	33	46
b. Special Equipment		80	30		22	88	110
Sub-Total B1	20	106	30		35	121	156
2 <u>Technical Assistance</u>							
a. Staff Fellowships	30	48	44	22	16	128	144
b. Student-Fellowships	67	67	91	91	316		316
Sub-Total B2	97	115	135	113	332	128	460
3 <u>Operating Costs</u>							
a. Salaries	50	60	70	80	260	-	260
b. Other costs	7	13	20	25	65	-	65
Sub-Total B3	57	73	90	105	325	-	325
Sub-Total B	174	294	255	218	692	249	941
TOTAL BASE COSTS	224	610	393	218	1,025	420	1,445
<b>II. Assistance to AETE</b>	30	40	80	109	248	11	259

INDONESIA NUTRITION DEVELOPMENT PROJECT

Project Cost Estimates  
Organization and Management  
US\$ '000

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
<b>A. <u>Project Directorate</u></b>							
1. <u>Technical Assistance</u> <sup>1/</sup>							
a. Consultants/Advisors	21	80	175	160	156	280	436
b. Fellowships	8	22	22	-	-	52	52
Sub-Total A 1.	<u>29</u>	<u>102</u>	<u>197</u>	<u>160</u>	<u>156</u>	<u>332</u>	<u>488</u>
2. <u>Operating Costs</u>							
a. Salary Support	38	38	38	42	156	-	156
b. Travel and Per Diem	6	7	8	10	31	-	31
c. Evaluation	50	80	80	140	280	70	350
d. Other Costs	6	6	6	6	24	-	24
Sub-Total A 2.	<u>100</u>	<u>131</u>	<u>132</u>	<u>198</u>	<u>491</u>	<u>70</u>	<u>561</u>
<u>Base Costs for A.</u>	<u>129</u>	<u>233</u>	<u>329</u>	<u>358</u>	<u>647</u>	<u>402</u>	<u>1,049</u>
<b>B. <u>Nutrition Unit in Agriculture Ministry</u></b>							
1. <u>Technical Assistance</u>							
a. Consultants	-	35	70	35	-	140	140
2. <u>Operating Costs</u>							
a. Travel	4	5	6	6	21	-	21
b. Other Operating Costs	5	5	5	5	20	-	20
<u>Sub-Total 2.</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>11</u>	<u>41</u>	<u>-</u>	<u>41</u>
<u>Base Costs for B.</u>	<u>9</u>	<u>45</u>	<u>81</u>	<u>46</u>	<u>41</u>	<u>140</u>	<u>181</u>
<b>TOTAL BASE COSTS (A and B)</b>	<u>138</u>	<u>278</u>	<u>410</u>	<u>404</u>	<u>688</u>	<u>542</u>	<u>1,230</u>

<sup>1/</sup> This includes assistance for the formulation of a National Food and Nutrition Program estimated at US\$190,000 (US\$120,000 local cost plus US\$70,000 foreign expenditures).

INDONESIA NUTRITION DEVELOPMENT PROJECT

Details of Salary Support for Project Director and Staff

	Monthly Rate	Number	US\$ '000				Total
			Year 1	Year 2	Year 3	Year 4	
<u>Project Director/Co-Directors</u> <sup>1/</sup>		4	2.7	2.7	2.7	2.7	10.8
<u>Secretariat</u>							
Executive Secretary	\$350	1	4.2	4.2	4.2	4.2	16.8
Deputy Executive Secretary	\$250	1	3.0	3.0	3.0	3.0	12.0
Finance Officer	\$250	1	3.0	3.0	3.0	3.0	12.0
Procurement Officer	\$250	1	3.0	3.0	3.0	3.0	12.0
Staff Support			2.2	2.2	2.2	2.2	8.8
Sub-Total (Secretariat)			15.4	15.4	15.4	15.4	61.6
<u>Monitoring and Evaluation</u>							
Senior Analyst/Planner	\$300	2	7.2	7.2	7.2	10.8 <sup>2/</sup>	32.4
Research Assistants	\$200	4	9.6	9.6	9.6	9.6	38.4
Support Staff			3.1	3.1	3.1	3.5	12.8
Sub-Total (Monitoring and Evaluation)			19.9	19.9	19.9	23.9	83.6
<u>Total for Project Director and Staff</u>			38.0	38.0	38.0	42.0	156.0

<sup>1/</sup> Part-time work payment

<sup>2/</sup> Staff increases to 3 during 4th year

INDONESIA NUTRITION DEVELOPMENT PROJECTDisbursement Schedule  
US\$ '000

	<u>Quarter Ending</u>	<u>Disbursements During Quarter</u>	<u>Cumulative Disbursements</u>
1977	June 30	-	-
	Sept. 30	48	48
	Dec. 31	96	144
1978	March 31	192	336
	June 30	148	484
	Sept. 30	250	734
	Dec. 31	350	1084
1979	March 31	800	1884
	June 30	508	2392
	Sept. 30	1100	3492
	Dec. 31	1100	4592
1980	March 31	1100	5692
	June 30	873	6565
	Sept. 30	1200	7765
	Dec. 31	1200	8965
1981	March 31	1200	10165
	June 30	607	10772
	Sept. 30	800	11572
	Dec. 31	1100	12672
1982	March 31	328	13000

INDONESIA NUTRITION DEVELOPMENT PROJECT

Schedule of Technical Assistance  
(In Man-Months)

	<u>Short-term</u>	<u>Long-term</u>	<u>Total</u>
<b>I. <u>CRDN</u></b>			
Research Specialist	12	-	12
Economist	6	-	6
Community Nutritionists	<u>6</u>	-	<u>6</u>
SUB-TOTAL CRDN	<u>24</u>		<u>24</u>
<b>II. <u>FTDC</u></b>			
Program Advisor	-	24	24
Equipment Specialists	36	-	36
Research Specialists	<u>36</u>	-	<u>36</u>
SUB-TOTAL FTDC	<u>72</u>	<u>24</u>	<u>96</u>
<b>III. <u>NIPP</u></b>			
Advisor on Nutrition Education Manual	6	-	6
Training Consultant	-	10	10
Data Analyst	8	-	8
Local Advisory Services	<u>60</u>	-	<u>60</u>
SUB-TOTAL NIPP	<u>74</u>	<u>10</u>	<u>84</u>
<b>IV. <u>Nutrition Communication</u></b>			
Communication Specialist	-	12	12
Nutrition Education Advisor	35	-	35
Planning Consultant	-	-	-
SUB-TOTAL Nutrition Communication	<u>35</u>	<u>12</u>	<u>47</u>
<b>V. <u>Organization and Management</u></b>			
Project Management Advisor	-	24	24
Procurement Advisor	-	12	12
Planning Advisor	-	24	24
Monitoring and Evaluation Research Coordinating Committee	84	-	84
Part-time Advisory Panel	30	-	30
Assistance to Nutrition Unit in Ministry of Agriculture	34	-	34
	<u>12</u>	<u>12</u>	<u>24</u>
SUB-TOTAL Organization and Management	<u>156</u>	<u>72</u>	<u>228</u>
TOTAL (I+II+III+IV+V)	<u>361</u>	<u>118</u>	<u>479</u>

Around 201 months are for internationally recruited advisors.

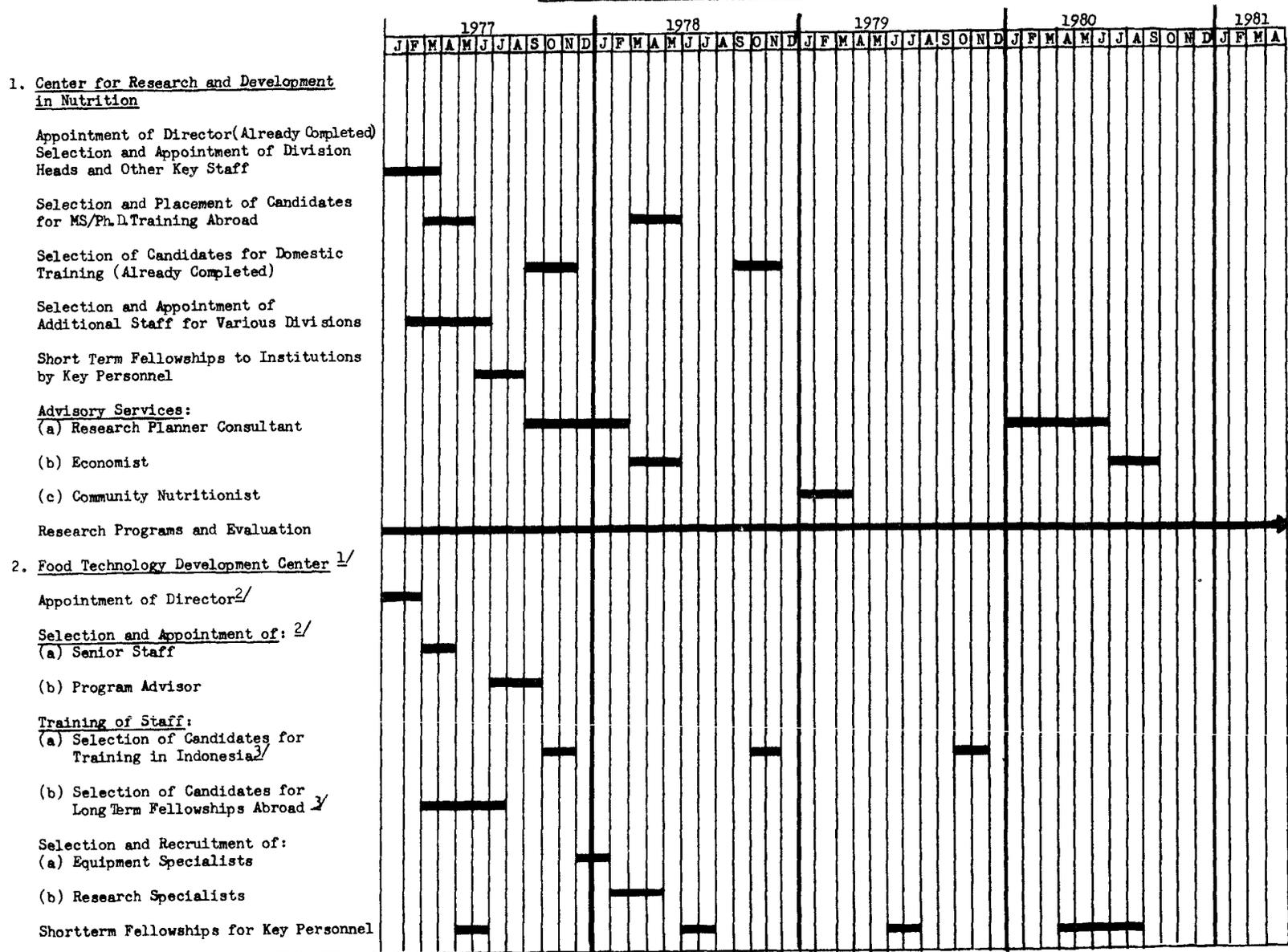
INDONESIA NUTRITION DEVELOPMENT PROJECT

Key Implementation Actions

Action	1977				1978				1979				1980			
	J	F	M	A	J	F	M	A	J	F	M	A	J	F	M	A
<b>Organization and Policy</b>																
1. Appointment of Project Director, Director, NIPP Coordinator and Project Manager	[Gantt bar from Jan 1977 to Feb 1977]															
2. Recruit Key Staff for CRDN, FTDC, NIPP	[Gantt bar from Jan 1977 to Feb 1977]															
3. Recruit Project Management Advisor	[Gantt bar from Jan 1977 to Feb 1977]															
4. Draw up Program for Recruitment of other Consultants	[Gantt bar from Jan 1977 to Feb 1977]															
5. Set up Research Coordinating Board	[Gantt bar from Jan 1977 to Feb 1977]															
6. Draw up NIPP Plans of Operations for two Kabupatens	[Gantt bar from Jan 1977 to Feb 1977]															
7. Approval of plans of operation for NIPP by Government	[Gantt bar from Mar 1977 to Apr 1977]															
8. Selection of Kabupatens in NIPP for Year 2	[Gantt bar from Mar 1977 to Apr 1977]															
9. Training of NPOs/ANPOs	[Gantt bar from Jan 1977 to Feb 1977]															
10. Review of NIPP	[Gantt bar from Mar 1978 to Apr 1978]															
11. Decision on: (a) Future Direction of NIPP (b) Selection of new NIPP Kabupatens	[Gantt bar from Mar 1978 to Apr 1978]															
12. Seminar on food storage and processing	[Gantt bar from Mar 1978 to Apr 1978]															
13. Policy decisions on food storage program	[Gantt bar from Mar 1978 to Apr 1978]															
14. Expanded pilot program on storage	[Gantt bar from Mar 1978 to Apr 1978]															
15. Development of technology packages for village/home gardens	[Gantt bar from Mar 1978 to Apr 1978]															
16. Village/Home garden program	[Gantt bar from Mar 1978 to Apr 1978]															
<b>17. Evaluation</b>																
(a) Setting up of evaluation unit	[Gantt bar from Mar 1978 to Apr 1978]															
(b) Studies and evaluation	[Gantt bar from Mar 1978 to Apr 1978]															
<b>18. Preparation of national program:</b>																
(a) First outline	[Gantt bar from Mar 1978 to Apr 1978]															
(b) Discussions of outline program	[Gantt bar from Mar 1978 to Apr 1978]															
(c) Finalization	[Gantt bar from Mar 1978 to Apr 1978]															
<b>Execution of Physical Project Components</b>																
<b>1. Civil Works</b>																
(a) Complete engineering designs for CRDN, FTDC/Nutrition Academy	[Gantt bar from Mar 1978 to Apr 1978]															
(b) Complete tender documents for buildings	[Gantt bar from Mar 1978 to Apr 1978]															
(c) Tendering and contract award	[Gantt bar from Mar 1978 to Apr 1978]															
<b>2. Equipment</b>																
(a) Complete tender documents for furniture for buildings	[Gantt bar from Mar 1978 to Apr 1978]															
(b) Complete tender documents for specialized equipment as required for buildings planned for completion	[Gantt bar from Mar 1978 to Apr 1978]															
(c) Purchase of vehicles for preliminary start-up	[Gantt bar from Mar 1978 to Apr 1978]															
(d) Purchase of other vehicles for project	[Gantt bar from Mar 1978 to Apr 1978]															

INDONESIA NUTRITION DEVELOPMENT PROJECT

Project Implementation Schedule



<sup>1/</sup> For Civil Works and Equipment schedule see Annex 10 (Appendix 3).

<sup>2/</sup> Until the buildings are completed and equipment is fully ready, the staff will work out of the present facilities in IPB campus. The construction will be phased so that the staff can start operating in buildings which are completed earlier and additional staff will be recruited as more buildings become ready. The Director has been nominated.

<sup>3/</sup> Candidates presently undergoing training in Indonesia/abroad would be available in 1977 and 1978 for appointment as Staff.



