

*This report contains the collective views of an international group of experts and does not necessarily represent the decisions or the stated policy of the World Health Organization or of the Food and Agriculture Organization of the United Nations.*

**WORLD HEALTH ORGANIZATION  
TECHNICAL REPORT SERIES**

No. 584

**FAO NUTRITION MEETINGS REPORT SERIES**

No. 56

**FOOD AND NUTRITION  
STRATEGIES IN NATIONAL  
DEVELOPMENT**

**Ninth Report of the Joint FAO/WHO  
Expert Committee on Nutrition**



Published by  
FAO and WHO



**WORLD HEALTH ORGANIZATION**

**GENEVA**

1976

ISBN 92 4 120584 9

© FAO and WHO 1976

PRINTED IN SWITZERLAND

# CONTENTS

	Page
General Introduction . . . . .	7
1. The present food and nutrition situation . . . . .	8
1.1 Extent and nature of the malnutrition problem . . . . .	9
2. Past approaches to the problem . . . . .	10
2.1 Experience with Applied Nutrition Programmes . . . . .	11
2.2 Modification of the food supply . . . . .	11
2.3 Present trends . . . . .	12
3. The need for a new approach . . . . .	13
3.1 Nutrition in national development planning . . . . .	14
3.2 The scope of food and nutrition policies . . . . .	17
3.3 Three elements of a food and nutrition strategy . . . . .	18
3.4 The integration of food and nutrition planning into national development programmes . . . . .	19
4. An approach to food and nutrition planning . . . . .	22
4.1 Economic growth, structural change and agricultural strategy in relation to nutritional improvement . . . . .	24
4.2 Food policy planning . . . . .	30
4.3 The basis of a nutritionally adequate diet . . . . .	33
4.4 Health strategies and direct measures for nutritional improvement . . . . .	35
4.5 Complementarities among the elements of strategy . . . . .	40
5. Food and nutrition planning and its implementation . . . . .	41
5.1 Analysis of the nutrition problem . . . . .	41
5.2 Identification of relevant measures . . . . .	44
5.3 Organizational requirements for food and nutrition planning . . . . .	45
5.4 Data support requirements . . . . .	47
5.5 Nutrition indicators . . . . .	50
5.6 Delivery systems for nutrition programmes . . . . .	52
5.7 Criteria for the evaluation of alternative programmes . . . . .	53
5.8 Training needs in relation to the planning and implementation of food and nutrition policy . . . . .	55
6. Research needs . . . . .	56
6.1 Identification and analysis of nutrition problems in populations . . . . .	57
6.2 Programme development . . . . .	57
6.3 Direct intervention programmes . . . . .	58
6.4 Evaluation . . . . .	58
6.5 Political and organizational aspects . . . . .	58
References . . . . .	60
Annex 1 . . . . .	61
Annex 2 . . . . .	62

# JOINT FAO/WHO EXPERT COMMITTEE ON NUTRITION

Rome, 11-20 December 1974

## Members:

- Dr. J.M. Bengoa, Adviser, National Institute of Nutrition, Caracas, Venezuela  
(*Vice-Chairman*)
- Dr. D.L. Boianovsky, Nucleo de Nutricao e Medicina Tropical, Universidade de Brasilia, Brasilia, Brazil
- Dr. H. Ghassemi, Associate Professor of Nutrition, School of Public Health, University of Teheran, Teheran, Iran
- Dr. C. Gopalan, Director-General, Indian Council of Medical Research, Ansari Nagar, New Delhi, India
- Dr. B.F. Johnston, Professor, Food Research Institute, Stanford University, Stanford, California, U.S.A. (*Chairman*)
- Mr. J.L. Joy, Professor, Institute of Development Studies, University of Sussex, Brighton, England
- Dr. M.C. Latham, Professor of International Nutrition, Division of Nutritional Sciences, Cornell University, Ithaca, New York, U.S.A.
- Dr. F.J. Levinson, Director, International Nutrition Planning Programme, Massachusetts Institute of Technology, Cambridge, Massachusetts, U.S.A.
- Dr. Asok Mitra, Secretary to the President of India, Rashtrapathy Bhavan, Presidential Secretariat, New Delhi, India
- Dr. Raja A. Noordin, Director of Health Services, Ministry of Health, Kuala Lumpur, Malaysia
- Dr. S.O. Olayide, Professor and Head, Department of Agriculture Economics, University of Ibadan, Ibadan, Nigeria
- Mr. P.R. Payne, Senior Lecturer, Department of Human Nutrition, London School of Hygiene and Tropical Medicine, London, England
- Dr. Vidosav Trickovic, Associate Professor, Faculty of Economics, University of Belgrade, Belgrade, Yugoslavia

## Representatives of other organizations:

- Dr. L.J. Teply, Senior Nutritionist, Office of the Director, United Nations Children's Fund, New York, U.S.A.

## Secretariat:

- Dr. K. Bagchi, Medical Officer, Nutrition, WHO, Geneva, Switzerland (*Joint Secretary*)
- Dr. K.V. Bailey, Regional Nutrition Adviser, WHO, Brazzaville, People's Republic of the Congo
- Dr. M. Béhar, Chief Medical Officer, Nutrition, WHO, Geneva, Switzerland
- Mrs. D.L. Bocobo, Nutrition Policy and Planning Officer, Food Policy and Nutrition Division, FAO, Rome, Italy (*Joint Secretary*)

- Dr. D. Calloway, Professor of Nutrition, University of California, Berkeley, California, U.S.A. (*FAO Consultant*)
- Dr. E.M. DeMaeyer, Medical Officer, Nutrition, WHO, Geneva, Switzerland (*Joint Secretary*)
- Dr. P. Lunven, Chief, Nutrition Policy and Programmes Service, Food Policy and Nutrition Division, FAO, Rome, Italy
- Dr. J. Périssé, Senior Officer, Nutrition Policy and Programmes Service, Food Policy and Nutrition Division, FAO, Rome, Italy



**Ninth Report of the Joint  
FAO/WHO Expert Committee on Nutrition**

**GENERAL INTRODUCTION**

The Ninth Session of the Joint FAO/WHO Expert Committee on Nutrition met in Rome from 11 to 20 December 1974. The special topic for discussion was food and nutrition strategies in national development. This topic was particularly timely in view of a resolution passed by the World Food Conference, held in Rome a few weeks earlier, "that all governments and the international community as a whole ... formulate and integrate concerted food and nutrition policies in their socio-economic and agricultural planning ...". Owing to the interdisciplinary nature of the problem, the Joint Expert Committee included not only nutritionists but also economists, public health specialists and development planners. The objectives of the meeting were:

(a) to review the scope and objectives of a national food and nutrition policy;

(b) to review methodologic approaches in food and nutrition planning and provide guidance on a scientifically sound yet practical method, particularly for developing countries;

(c) to recommend a workable mechanism for integrating nutrition into national development plans; and

(d) to identify areas of training and research, particularly those calling for action by FAO and WHO for the improvement of the methodology of national food and nutrition policy formulation.

This report gives the Committee's views on these difficult matters. There was not always complete agreement on all issues raised and the report perhaps poses more questions than it answers. On the other hand, the areas of consensus were substantial. The Committee concluded that much too little is known about the state of malnutrition and a need was indicated to include, in both national and international economic reports, information relevant to an understanding of the evolution and magnitude of nutritional problems.<sup>a</sup>

---

<sup>a</sup> *Recommendation for a regular review of the state of malnutrition*

The Committee stated that FAO and WHO would perform an invaluable service in issuing a regular review of the state of malnutrition. This review would focus concern upon the evolution and magnitude of the problem of malnutrition and make the very important point that the "state of malnutrition" is different from, albeit related to, the "state of food and agriculture". The review should highlight the most significant causal factors. The heart of the work would be a demographic classification of "at risk" groups and a report on key indicators, such as food supply, demand and prices,

It is hoped that this report will promote a better understanding of the task of formulating food and nutrition strategies as an integral part of national development. At the least, it has laid the foundation for a continuing dialogue between nutritionists, public health administrators, economists and development specialists.

## 1. THE PRESENT FOOD AND NUTRITION SITUATION

The world has recently experienced a state of acute food crisis more serious and widespread than it has known since the 1940s. There have been grave food shortages, due to crop failures occurring simultaneously in a number of countries since 1972. Prices of food, fertilizers, energy and other commodities have sky-rocketed. Those developing countries which needed to import food and fertilizer experienced a tremendous strain on their balance of payments, as prices soared and reduced the availability of foreign exchange for imports of equipment and raw materials. To avoid dependence on imports and to meet the needs of growing populations, the developing countries will need to sustain high rates of increase in food production. To ensure the ability to meet possible future crises, world cereal stocks will need to be rebuilt to safer levels.

The fears and anxieties aroused during the past two years have reminded the world of the existence of a more profound and persistent problem. This is nothing less than the continuing deprivation and suffering of the hundreds of millions of people who are permanently hungry and whose capacity for living a normal life cannot be realized. The numbers of people in this condition appear to be growing alarmingly.

The declining infant mortality rates observed during the last three decades in the developing countries have frequently been cited as evidence of improvement in the nutritional situation. In fact, however, those reduced mortality rates are due mainly to other factors, notably the implementation of public health measures and maternal and child-care services. It is clearly a significant gain that families do not experience the tragic loss of children as frequently as in the past. But it needs to be recognized that, in many situations, those gains are illusory, because there is no corresponding improvement in the health of the children who survive. Indeed, as a consequence of their inadequate growth and development and high rates of morbidity, the health and well-being of many of the survivors is at an appallingly low level, with no improvement in the quality of life.

---

employment, infant mortality, etc. and the implications for changes in nutrition status. Such an enterprise would be dependent on continued cooperation by countries in the supply of the required data.



## 1.1 Extent and nature of the malnutrition problem

According to the "Assessment of the World Food Situation – present and future", a working paper prepared for the United Nations World Food Conference held in November 1974, close to 500 million people are underfed.<sup>(1)</sup> Much too little is known, however, about the "state of malnutrition". There is clearly a need to give explicit attention to the evolution and magnitude of nutritional problems in both national and international economic reports, in order to focus attention on their importance. Such analyses should, of course, report on indicators such as food supply, demand, prices and trends in the overall situation but, insofar as possible, attention should be given to identifying the particular groups experiencing serious nutritional deprivation, and to analysing the causal factors. Such an enterprise would depend on co-operation by countries in supplying the required data, but indications by international agencies of the relevance and need for such information might of themselves have value in encouraging countries to obtain better and more disaggregated data essential to an adequate understanding of the nutrition situation.

Despite the lack of precise quantitative information, it is all too apparent from the evidence that is available that under- and malnutrition are extremely serious problems in the developing regions of Asia and the Far East, the Near East, Africa and Latin America. Malnutrition is an especially important, though often hidden, cause of mortality among children. There is a high incidence of infectious diseases among young children in most developing countries and the resultant high morbidity and mortality is largely due to lowered body resistance because of malnutrition. A deterioration of nutritional status is reported from many countries. The existence of malnutrition on any scale should be cause for concern. The present and projected magnitude of the problem calls for the most urgent consideration of the means for its elimination.

Protein-energy (calorie) malnutrition (PCM) is the most widespread nutritional disease among children in all of the developing countries of the world. It is not only an important cause of child mortality and morbidity, but leads also to permanent impairment of physical and, possibly, of mental growth of those who survive. An analysis of 101 community surveys conducted in 59 developing countries during the years 1961 to 1971 indicates that not less than 100 million children under 5 years of age are affected by moderate to severe PCM. The inter-relationships of various dietary factors in the etiology of PCM have been described by the Joint FAO/WHO Expert Committee on Nutrition in its Eighth Report.<sup>(2)</sup> It needs to be emphasized that the primary cause of PCM can be overcome only by significant changes in the socio-economic characteristics of the communities.

On a global basis, other deficiency diseases that deserve high priority action are xerophthalmia, nutrition anaemias and endemic goitre. In certain

geographical areas, notably in North Africa, rickets continues to be a serious nutritional problem, as are pellagra and zinc deficiency.

A basic feature of the present situation is the extreme inequality in the distribution of food among different socio-economic groups. Thus, in such widely dispersed countries as Brazil, India and Tunisia, it has been estimated that the 20 percent of the population with the lowest income has half the *per capita* energy intake of the top 10 percent. Moreover, within families, it is the children and women who receive the lesser share of what food is available.

Inadequate diets that result from insufficient purchasing power are a common problem among the desperately poor in the slums of the major cities. Even more widespread are diet deficiencies among the rural population, where small farmers, tenants and landless labourers are often unable to produce or to buy sufficient food to meet their nutritional requirement. Those problems are particularly pronounced in areas characterized by scarcity of arable land and also in regions where rainfall is erratic and only marginally adequate for farming in a normal year.

Most developing countries are faced with overwhelming problems of poverty, with increasing numbers displaced from the land and unable to obtain adequate employment. These problems of poverty — under- and unemployment, heavy pressure of population on the land, low productivity of agriculture, uneven distribution of income and consumption, poor environmental sanitation, illiteracy and cultural deprivation — are difficult to overcome, because of resource constraints, industrial backwardness, and a low level of application of modern science and technology. There is a growing awareness that malnutrition is largely a result of poverty arising from this complex of interrelated factors, often aggravated by glaring socio-economic inequalities. The remaining chapters of this Report analyse those complex problems and attempt to offer some practical guidelines for an approach to their solution.

## 2. PAST APPROACHES TO THE PROBLEM

As far back as the 1930s, the League of Nations advocated that attempts to solve food and nutrition problems should be directed to their root causes. In the past, development strategies have not generally succeeded in reducing poverty, even where they have been successful in raising average incomes.

During the past twenty years, many governments have undertaken nutrition programmes to assist vulnerable groups, aimed particularly at the eradication of protein-energy malnutrition. Past efforts to improve nutrition have, however, often been piece-meal and in the nature of therapeutic approaches to manifestly chronic nutritional disorders.

More recently, supplementary feeding programmes for vulnerable groups, food fortification, nutrition rehabilitation programmes, nutrition activities through Mother and Child Health services or "under-five" clinics, nutrition education and many other interventions have had an appreciable impact in a number of countries. However, the magnitude of the problem remains enormous, because insufficient efforts have been made to alleviate the underlying causes and thus prevent the problem.

## **2.1 Experience with Applied Nutrition Programmes**

In the late 1950s, Applied Nutrition Programmes (ANP) were initiated in many countries, with FAO, WHO and UNICEF assistance. These village-level programmes include nutrition education; efforts to improve school and community food production and preservation, and supplementary feeding for vulnerable groups. In all of these projects, there has been an attempt to mobilize action on the part of the people, to supplement government efforts, particularly at the community level.

Although the ANPs represented a first serious approach to the involvement and coordination of agriculture, health and education, many of the programmes have not come up to expectations. In part, this is because they have been formulated as isolated programmes outside the general development plans of the country; as a result, they have not had adequate financing and support and many of them could not even expand beyond the pilot stage. More importantly, however, it now seems clear that, wherever possible, such programmes should be complementary to more fundamental measures aimed at the reduction of poverty.

## **2.2 Modification of the food supply**

A major element — perhaps *the* major element — of nutrition policies in the past has been the concern to ensure adequate supplies of nutritious foods. Planning approaches have been based on attempts to assess the levels of supplies that would be adequate to meet nutrition needs and to pursue programmes to achieve production targets derived in this way. However, it is increasingly appreciated that simply increasing food supplies does not of itself solve the problem. More especially, attempts to increase existing supplies by the amount by which the intakes of the malnourished are estimated to be, in aggregate, deficient may do little to raise the intakes of the malnourished.

With the exception of a few small countries in a favoured position to finance enlarged food imports out of increases in foreign exchange earnings, an annual rate of growth of food output of something like 3 percent is, of course, needed simply to prevent deterioration in an already precarious food situation, and this is no easy task. In the six years preceding the Green Revolution, some countries were failing to expand food production in pace with the growth of effective demand and, even with large and expanding

imports of food grains which were satisfying a substantial part of the increase in demand, there was a marked tendency for the level of food prices to rise. The Green Revolution has made a notable contribution in accelerating the rate of growth of food production and, in some countries, the trend toward growing dependence upon imported supplies has been reversed. The new seed and fertilizer technologies offer promise for continued expansion of food production at a rate sufficient to support the achievement of national goals of economic and social development.<sup>a</sup> However, the Green Revolution has had some undesirable effects, particularly as regards the extent to which benefits have been concentrated within particular areas and among larger farmers. This concentration of resources within a large-scale and capital-intensive sub-sector has meant that the spread of improved income-earning opportunities has been restricted and some sectors of the population have been adversely affected by it. However the trend toward growing dependence upon imported supplies was reversed in a number of countries and the new seed and fertilizer technologies offer promise for continued expansion of food production at a rate sufficient to support the achievement of national goals of economic and social development.<sup>a</sup>

What is now seen to be of prime importance is that all should have the means to produce or to purchase their food requirements. For those who produce food for their own existence, programmes may be needed which aim at raising their productivity. To some extent, this must also aim at encouraging the use of improved farm inputs and thus also at encouraging them to produce a surplus for sale. For those who purchase their food, it is important that food prices are not so high as to make subsistence beyond their means. Thus, the objective of food supply planning must not be to achieve requirements targets, but, rather, to meet demand at desired price levels.

### 2.3 Present trends

The 1970s were ushered in with a growing concern for the limited success of nutrition programmes in many countries. There was also increased awareness that malnutrition, although a health problem, affects and is affected by all efforts to promote national development. Economists and policy-makers started to look afresh at the persistent and widespread

---

<sup>a</sup> Unfortunately, the rate of progress has faltered during the past three years, as a result of unfavourable weather conditions and the abrupt shift from a situation of abundant and cheap fertilizers to a world-wide shortage and sharply increased prices. There has been a common tendency to attribute the sharp rise in fertilizer prices to the even sharper rise in petroleum prices. However, because of the dominant and growing importance of natural gas as a feedstock for nitrogen fertilizers and widespread availability at low opportunity cost, there is a great potential for relatively low-cost expansion of nitrogen fertilizers, which account for some 60 percent of total fertilizer consumption in the developing countries.

global malnutrition problems. Conferences and seminars were held (3, 4), the purpose of which was to stimulate nutritionists and development specialists to talk to each other, share information on mutual tasks, and search for ways to advance the goals of national development through improving the nutritional and health status of a nation's population.

Experience has been accumulating on the application of analytical techniques to food and nutrition planning. The chief limitations to effective planning, however, have been poor problem perception and inadequate procedures for the identification, design and appraisal of measures directly and indirectly affecting nutrition. These shortcomings do not stem primarily from resource or data limitations. Planning procedures which ask the right questions will get better results than those which ask irrelevant questions, regardless of the quality of the data or analytical skills brought to bear in answering them.

A new approach to nutrition in national planning is required, because old approaches have failed in situations far less serious than those now faced and because, if they are continued, they will lead to more rather than less malnutrition. They might well lead also to less rather than more "development". In any case, the magnitude of the problem that now threatens many countries demands a re-examination of past strategies and a search for a more effective approach to nutrition in national planning.

### 3. THE NEED FOR A NEW APPROACH

The purpose of this Report is to argue the desirability of a new approach to nutrition in development planning and policy making and to indicate what it is in practice that should be done. The emphasis is on procedures for the formulation and implementation of effective food and nutrition strategies that constitute an integral part of a country's efforts to promote development and which are feasible given its resource constraints. This reflects a growing realization of the critical importance to so many of adequate nutrition as a necessary first step in the improvement in the quality of life. There is also an increased awareness that "successful development", defined simply in terms of an increase in average *per capita* incomes, does not necessarily lead to nutritional improvement. Indeed, it is now clear that development strategies pursued according to the policies and criteria that have guided past efforts have often failed to have a significant impact on the poverty of the world's poorest 40 percent and have commonly had the effect of aggravating malnutrition. Sustained reduction in nutritional deprivation will depend on the success of development efforts which give high priority to food and nutrition strategies that are designed to have a major impact in improving the health and nutrition of the large segments of the population that have been by-passed under previous development strategies.

### 3.1 Nutrition in national developing planning

An inadequate diet is unquestionably an important characteristic of a poor standard of living, but it is obviously not the only aspect of poverty, and an attack on nutrition problems *per se* will not resolve the fundamental problem of poverty. The most cogent reason why planners should be more explicit in their pursuit of nutritional objectives when formulating strategies for national development is that past strategies which focused too narrowly on the role of capital formation and increases in GNP have failed to reduce malnutrition. Not only did those strategies fail to give due weight to the distribution of gains in income but, in practice, they also failed to provide a basis for sustained economic growth. Moreover, even had they done so, a pattern of economic growth that by-passed a large segment of the population would not constitute successful national development by any acceptable definition of that term. Evidence is accumulating that growth (measured simply in terms of increases in *per capita* GNP) has frequently been accompanied by the aggravation of poverty and malnutrition (4a). And it is clear that those who remain in poverty, who have been by-passed by economic growth, are a large segment of the population. Moreover, this poverty, far from being a transitional phenomenon, is something which, in terms of the absolute numbers of those affected, is growing, even where there is a decline in the relative size of the economically and culturally deprived population.

In the past, the attitudes of planners toward malnutrition and other aspects of human well-being were much affected by the assumption that poverty and malnutrition were a necessary price to pay for rapid economic growth, as well as simply a characteristic of a low level of development. Accordingly, development planning was based on the proposition that the first task was to increase the productive capacity and material output of a country. Only at a later stage of relatively high material output, it was argued, could planners begin to consider questions of who benefits and in what way — including such questions as the nature and distribution of improvements in food consumption and nutrition status. This emphasis on the need to increase productive capacity led to great efforts to increase investment and savings, which were seen as alternatives to consumption. Thus, in order to accelerate development and hasten progress toward a situation where a country could afford to raise its consumption levels, present consumption was to be minimized in favour of investment. When, in addition to this, it is remembered that nutritional improvement was seen largely in terms of specific nutrition programmes, it is not surprising that, as with many programmes of social welfare, they were regarded as avoidable consumption to be cut when development plans had to be curtailed in the face of resource stringency.

The adverse effects of this heavy emphasis on a narrow view of capital formation and growth in total GNP have been reinforced by the widespread acceptance of import substitution strategies aimed at achieving rapid industrialization stimulated by high levels of tariff protection, import quotas, and the rationing of foreign exchange and import licences. To further the goal of stimulating rapid industrialization, imports of capital equipment have frequently been permitted at zero or very low tariff rates, and investment funds available from government development banks and from large institutional sources of credit have been provided at very low rates of interest, again with the object of stimulating capital formation. However, it is now perceived that this mix of policies has fostered the growth of a highly protected industrial sector which has limited capacity for sustained growth because it has tended to remain an inefficient "infant" industry. This is primarily a consequence of the lop-sided pattern of growth that has been induced by a distortion of the structure of relative prices. The proportionately small number of workers employed in these "modern sector" firms have generally obtained relatively high wages, but this has strengthened the tendency to resort to unduly capital-intensive techniques. Furthermore, the policies that have made it necessary to resort to administrative rationing of foreign exchange and of capital from institutional sources, because of an over-valued exchange rate and artificially low interest rates, have disadvantaged the country's farmers and aggravated the problems of the self-employed and small-scale businessmen in the informal sector.

Shortages of foreign exchange and capital, which are generally a feature of less developed countries, are accentuated for the great majority of producers because the modern-sector firms have preferential access to those resources and also because those same policies reduce the total supplies of capital and foreign exchange available: the measures which hold down interest rates tend to discourage domestic saving and repress the growth of a network of financial intermediaries; and an over-valued exchange rate reduces the attractiveness of production for export and thus slows the growth of foreign exchange earnings. Since agricultural exports usually bulk large in the developing countries, the farm population generally bears the brunt of maintaining an over-valued exchange rate and it also shoulders much of the burden of subsidizing inefficient domestic industries because of being obliged to pay high prices for farm inputs and consumer goods. At the same time, the growth of domestic commercial demand for farm products is restricted by the relatively slow growth of employment in the capital-intensive firms in the modern sector and the continuing low incomes of those in the informal sector.

The net effect of the past emphasis on a narrow view of capital formation and of attempts to promote growth by highly protectionist import substitution strategies has been to slow the rate of increase in *per*

*capita* incomes and to accentuate inequalities in income distribution. Those short-comings underscore the need to evaluate the effects of alternative strategies for fostering overall economic growth and agricultural development in terms of objectives that go beyond those summarized by evaluation procedures based on the use of the internal rate of return or benefit/cost ratios.

Where GNP maximization is the criterion for planning decisions, the case for increased attention to nutritional improvement is often based on the need to increase the health and thus the productivity of workers. A major weakness in this case derives from the fact that many of those who are handicapped by inadequate diets are unemployed or underemployed. Although the problems of under- and unemployment weaken any productivity argument for concern with nutritional programmes, they clearly have highly significant implications as to the design of development strategies which are emphasized in this and later chapters of the Report.

Recognition of the magnitude and persistence of the problems of deprivation existing in developing countries also points to the need to re-examine the objectives of development and the values on which those objectives are premised. Specifically, it would appear to be highly desirable to define, as explicitly as possible, the order in which alternative contributions to social welfare are ranked. Moreover, it is necessary to consider, again as explicitly as possible, how much a measured degree of improvement of welfare in one dimension is worth in terms of some alternative improvement.

Improvement in social welfare might alternatively be seen as reductions of deprivation. The perception of the improvement of social welfare as the reduction of deprivation — asking which reductions of deprivation should be most highly valued, or, in other words, would make the most significant contribution to improving social welfare — emphasizes the point that nutritional improvement for those so under-nourished that their function as human beings is gravely impaired may properly be regarded as one of the most significant contributions which could be made to reducing deprivation. The point could also readily be made that the valuation of such possible reductions of deprivation — or increments of social welfare — is often greatly understated by valuations of benefits based on increments of aggregate production valued at market prices.

Such an approach would not reduce planning simply to the provision of anti-poverty and social welfare programmes to the neglect of the development of industry and agriculture. It does mean, however, that industrial and agricultural development strategies should be judged by their expected impact on deprivation and its distribution — qualitatively, between people, and over time.

Such an approach would not start from the assumption that maximizing the market price value of production would lead to the composition of



output and to patterns of its distribution which would be most desirable in terms of social welfare. Better nutrition would not be the means to development, but a principal goal of development itself. However, the cost of better nutrition now would still need to be weighed against the cost of other improvements foregone, including improved nutrition in the future.

### 3.2 The scope of food and nutrition policies

The above arguments lead to the conclusion that food and nutrition policies should be a central concern of development planning, but it remains to define the scope of such policies. In the most general terms, the primary concern of food and nutrition policies in developing countries should be to improve the quantity and the quality of food ingested by the segments of the population subject to undernutrition and malnutrition. The most striking social benefits are, of course, associated with increasing the proportion of the population which is adequately nourished, but it must be recognized that the concept of an "adequate diet" is not a simple one. From the nutritional point of view, it may be modestly defined as a level of food intake sufficient to prevent serious or moderate degrees of malnutrition which impair health and productivity or it may refer to a level of nutrition which provides substantial margins above minimum requirements and makes an optimum contribution to the growth rates of children and to the health and the vigour of the population. The concept of an "adequate diet" must, to some extent, be subjective and operational, rather than objective. Ultimately, consideration might also be given to the economic and psychological satisfactions that are associated with a more diversified diet containing enlarged quantities of preferred but more expensive foods. But the value of improvements at this end of the scale is unlikely to rank with improvements of grossly inadequate diets. It should be noted that it is easy to go beyond good or optimal nutrition into a state of over-nutrition.

It is now recognized that over-consumption of foods such as animal products with a high content of saturated fat and cholesterol, or sugar and alcohol which provide "empty" calories, contributes to obesity and associated degenerative diseases (e.g., heart disease, diabetes) and to dental caries. Although the problems of over-nutrition are most common in affluent societies, they also exist among certain segments of the population of developing countries. These problems would therefore need to be ranked with other nutrition problems in establishing criteria for the determination of priorities.

A food and nutrition policy can usefully be described as dealing with the nutritional implications of policies in three primary areas:

(a) Food demand: *per capita* income and its distribution, food subsidies, consumer preferences and nutrition education, supplementary feeding programmes and population policy;

(b) Food supply: the pattern and level of food production and prices, food marketing, storage and processing, the nutritional value of the range of foods available, food exports and imports, food standards, and food safety; and

(c) Biological utilization: environmental factors affecting appetite and absorption, pregnancy spacing, lactation, physical activity, and food intolerances.

Although each of these three areas has significant nutritional implications, it does not follow that primary responsibility for generating policies and programmes in all of these areas should be assigned to a body of "nutrition planners". It is essential, however, to consider the nutritional implications of policies in each of these areas.

### **3.3 Three elements of a food and nutrition strategy**

In considering policy decisions which affect a country's food and nutrition situation, it is useful to emphasize that a food and nutrition strategy should embrace, at least, three distinct though related elements.

First, and most fundamental, the strategy for rural development should foster widespread improvements in productivity and output and be designed to improve the pattern of income distribution while, at the same time, achieving the required expansion of food production. The second necessary element involves measures to influence the combination of foods produced, the processing techniques employed and the distribution of these foods, so as to improve the quality of the diet available to all income groups. The third element is a complex of measures — nutrition-related health activities and nutrition intervention programmes — which have a more direct impact on the nutritional status and health of particular segments of the population. This Report is concerned with all three of these elements. None of them can be neglected, and they complement each other in ways that are highly significant. At the same time, it must be recognized that to a considerable extent they are also competitive, since resources are scarce relative to the requirements for economic and social development.

If the design of a food and nutrition strategy and plans for its implementation are to achieve the desired results, account must be taken of the specific circumstances prevailing in a particular country — and, indeed, in the various regions within the country. There are noteworthy differences in the ecology, in the availability of natural resources, in the funds and trained manpower available for the planning and execution of nutritional and other government programmes, and in the availability of data for appraising the food and nutrition situation and for the identification and preparation of projects. Perhaps of equal importance are differences between countries in the political climate and in the nature of a country's power structure and the political constraints that determine the extent of

national commitment to nutritional improvement and the type of programmes likely to be approved by policy-makers and likely to obtain meaningful support and effective implementation.

All of these sources of diversity can be expected to influence strongly the emphasis which might properly be given to the various elements of a food and nutrition strategy. There are so many variables involved that it would be impossible to elaborate a comprehensive typology. Of particular relevance are differences in a government's financial resources and existing decision-making and executive capacity. In some countries, both of those types of resources are adequate to permit the formulation of a comprehensive food and nutrition programme. In other countries, the resources available are more limited, but the possibility exists of overcoming present limitations in a reasonably short period of time. There are also countries in which financial and trained-manpower resources are exceedingly restricted. These latter countries, however, are often those which have the most severe problems of malnutrition. The importance of a sound decision-making process and a rational determination of priorities is, if anything, even more important in countries of this category than in countries with more ample resources. But planning procedures and the selection of programmes should, of course, be based on a realistic assessment of the existing financial and manpower constraints.

Several considerations justify giving explicit attention to issues related to the design of a strategy for agricultural development as one important element of a country's food and nutrition strategy. Apart from the need to expand food supplies, the extent to which the expansion of agricultural production will contribute to the achievement of nutritional goals (and other social goals) depends upon the type of strategy that is pursued and the resulting pattern of agricultural development, i.e., whether increases in production are concentrated within a modern sub-sector of atypically large and capital-intensive farm units or are the result of widespread advances in productivity and income affecting a large and growing fraction of farm and labourer households. To achieve the second pattern requires the progressive modernization of the existing small-scale farming systems, emphasizing new technologies and new inputs that are appropriate because they enhance the productivity of the labour, land and knowledge already available.

#### **3.4 The integration of food and nutrition planning into national development programmes**

The major decisions of development strategy which influence the rate of growth of output, employment and the pattern of income distribution have been emphasized because they have such a fundamental impact on the success of efforts to reduce and eventually eliminate malnutrition. When

agricultural and industrial policies are pursued which make it possible for the mass of the population, including especially the poor, to acquire new skills and knowledge and to benefit from the spread of new technologies and expanded use of capital and other resources, it becomes possible simultaneously to reduce poverty and achieve a high and sustained rate of economic growth. However, it is clearly essential, for food and nutrition planning, to supplement these general policies with measures aimed at reducing nutritional and related forms of deprivation among those in greatest need.

Social and economic forces do not work automatically to achieve these ends, and development strategies may even aggravate malnutrition if they are based on a narrow view of capital formation and maximization of *per capita* income which has the effect of channelling skills and resources to the larger farmers and the wealthier families. If planning is to reverse this bias, there must be a broad food and nutrition strategy to guide national development policies and effective criteria for identification, design and selection of appropriate measures adapted to the special problems and potentialities of specific population groups in particular geographic areas.

Measures appropriate for the reduction of malnutrition need to reduce the displacement of people from productive and self-supporting self-employment on the land; to encourage the absorption of those who are displaced in supplementary or full-time wage earning or other employment so as to generate the income required to meet their basic nutritional needs. It may also be desirable to support the real incomes of those whose production and earnings are not otherwise adequate for their subsistence. In addition, measures are needed to encourage and assist people to make better use of the resources and incomes they have for feeding themselves adequately. All this must be achieved in a situation in which supplies of basic foodstuffs are sustained at the levels required to meet the needs of growing populations and the increased demands of those previously not adequately fed. But it will not be sufficient to concentrate exclusively on measures to increase supplies, nor even on measures which increase employment overall. It will be necessary instead to ask who is malnourished, what might be done to improve their nutrition in their present circumstances and what might be done to raise income levels where these are critically low.

The formulation and implementation of policies and programmes for rural development and for more direct measures of nutrition intervention are likely to call for some degree of decentralization of overall planning so that the deprivations of specific population groups and the conditions prevailing in specific geographic areas can be fully identified and dealt with. Planning which is directed at particular groups and areas clearly must be based on an analysis of relevant data which are highly specific and disaggregated. Further, analysis of nutritional deprivation should be placed

in perspective in relation to the analysis of other forms of deprivation. Commonly, the various forms of deprivation will be found to be highly associated and interdependent, and measures to tackle them need to be co-ordinated and planned in full recognition of the complementarities.

One important requirement for effective food and nutrition planning is to avoid measures which either aggravate malnutrition or which have little or no useful impact. Thus the planning process should allow for the appraisal of measures, so that possible aggravating consequences should at least not pass unnoticed. This might appear so obvious as to be hardly worth mentioning. However, an actual situation illustrates the problem and the need for an effective checklist of questions aimed at revealing possible adverse consequences or reasons why a scheme intended to reduce malnutrition may have little impact.

The example relates to a scheme to introduce improved dairy cows as part of an area rural development plan. Its justification appeared to be clear since, in line with national development objectives, it was expected to raise farm incomes and, by increasing the supply of milk, contribute to the reduction of malnutrition. Further consideration revealed, however, that less than 1 percent of the farmers in the area had large enough holdings to qualify for participation in the scheme, so that the direct benefits would be to families whose incomes were already among the highest; that the change from arable cropping would lead to a net reduction in employment; and the milk was to be bought by better fed urban families 320 km away. Here, when we ask whose incomes and consumption are affected, we see that the incomes and consumption of the malnourished — those on the smallest holdings, and the landless especially — were not going to be improved and were even likely to be reduced.<sup>a</sup>

A suitable checklist of questions will often make it possible to identify problems such as those mentioned above, so that it becomes apparent before a scheme is adopted that it will be inefficient or even have the effect of aggravating malnutrition. Sometimes it will be impossible to evaluate the consequences satisfactorily in advance, in which case it may be advisable to adopt a programme on a trial basis. More generally, there is a need to design programmes so that provision for feedback and adaptive control is a feature of the initial design. All too often, field officers responsible for implementation have neither the time nor the training to monitor programmes unless provision for evaluation has been built in as a routine procedure. This is one of several considerations which suggest that it may be valuable to assign specialist officers to assist field officers in designing

---

<sup>a</sup> It is worth noting, however, that there have been other projects in which improved dairy cows have been introduced on small farms with the beneficial effects of improving the nutritional status of family members and providing a useful additional source of cash income.

programmes which are both relevant and capable of being effectively implemented. A major contribution of such specialists could be to emphasize throughout the planning process that there must be consistent concern for the nature of the deprivation one is trying to reduce, its causes, characteristic manifestations and dynamics and to emphasize the concept of relevance of measures proposed for their alleviation.

The organizational requirements for formulating and implementing food and nutrition policies and programmes are considered in Section 5. The nature of specific organizational arrangements will depend on a country's level of development, existing administrative structure and other local circumstances. However, the problem of integrating food and nutrition considerations into the design and implementation of national development policies and programmes gives rise to certain questions which will have to be confronted. It appears, for example, to be especially important to ensure that the structure and process of planning facilitates an overview of alternative programmes. Thus a need arises to consider whether existing administrative arrangements are likely to be effective in ensuring such an overview, and in deciding which measures would be most suitable for dealing with the problem of reducing nutritional and other forms of deprivation, and how departmental responsibilities might best be assigned to ensure effective coordination of complementary activities.

These problems arise in relation to overall national strategy. In practice, they arise, too, in attempting to identify, design and select measures most relevant to addressing local problems and potentials. Indeed, in the end, national plans are expressed not only in national policies in such fields as prices taxes and subsidies but also in the sum of specific localized programmes and projects. Thus, overview and coordination are necessary also at the local level and this raises questions about administrative arrangements for local-level planning and of the relation of local to national planning. The identification of weaknesses in planning structures may lead to an understanding of weaknesses in planning and of the nature of changes required if planning is to be improved. Immediately feasible improvements may not be very great, however.

#### **4. AN APPROACH TO FOOD AND NUTRITION PLANNING**

It is held that a major objective of national development is to create conditions which enable every individual to have a diet which provides his nutritional requirements, to permit him to achieve his inherited physical and mental potential and to sustain him at a full level of activity. Thus, planning goals should constitute steps toward the achievement of this objective and planning decisions should reflect the expression of priorities in the approach to this objective in relation to the feasibility and cost of the pursuit of alternative goals.

Attempts to promote food production for market which focus on the larger commercial farmers and the more fertile farming areas are likely to aggravate malnutrition among some segments of the rural population — small farmers, the landless and those cultivating marginal lands — however much they keep down food prices for urban consumers. Thus, while a significant trend towards increase in food production — and marketed surpluses — is likely to be necessary for the reduction of malnutrition in most developing countries, it is imperative that this be achieved in ways which attempt especially to promote an increase of production and productivity among the poorest.

While many measures may have an important role in overall nutritional improvement — including measures to influence the composition and nutritional adequacy of the national food supply, direct nutrition intervention and health measures, and nutrition education — they cannot substitute for strategies and measures which increase the real incomes of the poor. Thus, the success of efforts to reduce nutritional deprivation will depend on the extent to which resources can be made more productive in ways which ensure that the deprived benefit from the resultant increases in output. To reduce nutritional and other forms of deprivation, the twin concerns of increasing production and ensuring that the deprived benefit thereby must be approached concurrently rather than sequentially.

In general terms, the most essential need is to increase the opportunities for productive employment — including self-employment — and at a rate which exceeds the rate of growth of the labour force. But in a significant sense, this is an inadequate statement of what is required, for what matters is who gets the newly generated income. Only that which accrues to those who cannot afford an adequate diet will have a significant impact on malnutrition.

Policies which encourage capital-intensive technologies and the concentration of investment among relatively few in industry and in agriculture limit the spread of the benefits and the growth of output. On the other hand, policies that make it possible for the mass of the population — including, especially, the poorest — to acquire assets and skills and to benefit from new technologies and capital will reduce poverty while sustaining economic growth. What matters is that such policies can be given concrete expression: that technologies and forms of organization which allow both increasing output and the direction of benefits to the poor can be found and incorporated effectively into development strategies. It is stressed here that a new approach to the identification of development programmes and strategies will produce measures to achieve these ends and that it will produce plans which are noticeably different from those now most commonly produced.

The success of efforts to improve returns from labour and to raise *per capita* incomes would obviously be facilitated by a slowing of the present

rapid rates of population growth. A lowering of birth rates depends, however, on changes in attitudes, motivation and ideas about optimal family size, and the mere act of launching a family planning programme cannot be expected to have a significant impact on those determinants of fertility. The social and attitudinal changes induced by broad participation in economic and technical advance and the similar changes in expectations which result from improved health and nutrition are likely to be a precondition to reducing population growth.

#### **4.1 Economic growth, structural change and agricultural strategy in relation to nutritional improvement**

First of all, the fact that some 60-80 percent of the population and work force is still dependent on agriculture for work and income in the majority of the world's low-income countries has implications that are of fundamental importance. Altering the predominantly agrarian structure of these countries will be a slow process extending over several decades at least. The upsurge of population growth rates in developing countries has been followed by a similar upsurge in the rates of growth of the population of working age. This rapid growth of the total labour force, in combination with existing capital-intensive patterns of investment in non-farm industries, has meant that most of the annual additions to the labour force have had to be absorbed within the agricultural sector. However, there have been many unable to obtain land or regular employment in the countryside and who have migrated to the towns in search of employment. Because the number of migrants to urban areas greatly exceeds the rate of increase in employment opportunities, this produces a situation which gives rise to social, political and health problems that are often even more acute than those existing in the rural areas. It is sometimes assumed that the resulting problems of unemployment and underemployment of migrants to cities are primarily a consequence of the lack of training, knowledge or skill of these new entrants into the labour force. For the individual job seeker, the prospect of finding employment is, of course, improved by a higher level of skills or training. But, in aggregate terms, it is the rate of growth of opportunities for productive employment, including very importantly self-employment in agriculture, which determines the fraction of the labour force that is either visibly unemployed in urban areas or left to eke out a miserable existence in agriculture because it lacks the land, purchased inputs, or knowledge necessary to raise, or even to maintain, the *per capita* level of farm income.

The fact that agriculture dominates the work force and economic activity means that development of the agricultural sector is bound to have important repercussions on overall economic growth. More concretely, the



type of agricultural strategy that is pursued, and the resulting pattern of rural development, will be a major determinant of the rate, and still more of the pattern, of industrial expansion and of the growth of non-farm employment opportunities. The rate of growth of population and of the total labour force is the other basic determinant of the time required to achieve structural transformation, i.e., the process whereby a predominantly agrarian society is transformed into a productive and diversified industrial economy.

Just as the task of raising *per capita* incomes is made more difficult by the half-completed demographic revolution — a situation in which large reductions in death rates have not yet been matched by any appreciable decline in birth rates — it is clear that progress in reducing the rate of population growth and (with a time lag) the rate of increase in the total labour force is also critical to the success of efforts to accelerate the structural transformation process. It is for these reasons that special attention is given in later parts of this Section to the evidence which points to important interrelations between health and nutrition programmes and a country's pattern of rural development and the success of efforts to achieve widespread acceptance of the practice of family planning.

One of the most striking contrasts between developed countries and most of the world's developing countries is the fact that, in the former, the process of economic growth has led to enormous changes in their economic structure epitomized by the decline in the share of the agricultural labour force to some 5-15 percent of the total. In this analysis of the choice of strategy for agricultural development, considerable attention is given to the implications of that contrast. A fundamental consideration is that the process of structural change is both a reflection of and a necessary condition for an enormous increase in specialization in all types of economic activity — and in other domains as well. It is this process of structural change and increased specialization and interdependence which in developed countries has made it possible for one farm household to produce enough to feed itself and 20 or 30 persons outside agriculture.

The need for approaches adapted specifically to the distinctive features of today's low-income countries derives most obviously from the structural and demographic characteristics emphasized earlier. A major implication is that technologies which require only a gradual increase in the use of purchased inputs must be emphasized, if a large and increasing fraction of a country's farm households are to be involved in the process of progressive modernization. That is, the increases in agricultural productivity and output must derive primarily from enhancing the productivity of the farm-supplied resources of land and labour and also of those of capital such as livestock which are essentially an embodiment of the resources available at the farm or village level. If the new inputs have the effect of displacing instead of complementing the large and growing farm work force, the existing

problems of unemployment and under-employment will be aggravated. Until the relative and absolute size of a country's non-farm sectors have expanded considerably, opportunities for employment outside agriculture simply cannot be created rapidly enough to absorb more than a relatively small fraction of the annual additions to the labour force.

A further implication is that the achievement by the mass of the population in developing countries of decent standards of nutrition, health, housing, and consumption of other basic necessities will not be feasible if progress is defined uncritically in terms of simply replicating the consumption patterns that have emerged in the presently industrialized countries. The possibility of drawing upon the enormous stock of scientific knowledge and the highly productive technologies available in the economically advanced countries makes it possible for the developing countries to achieve very rapid economic growth. However, there is a strong possibility that the technologies that are borrowed will be poorly adapted to the needs of a developing country. In particular, the adverse effects of the price distortions and economic policies that lead to lop-sided growth, which have been noted earlier, are especially serious because they encourage excessive reliance on capital-intensive technologies evolved in countries with a drastically different economic structure and where scarcity rather than abundance of labour has been a major factor influencing technological innovations. Indeed, there is belated awareness that these patterns will have to be altered considerably, even in the developed countries, for reasons which range from the dangers of overnutrition to recognition of the pollution and other environmental impacts that are a by-product of increasingly high level of consumption.

For today's developing countries, the most immediate need is for a properly designed industrial development strategy which strengthens the intersectoral linkages that are of crucial importance for agricultural development and particularly for the transformation of a traditional, largely subsistence-oriented farm sector into a more productive market-oriented one. By making possible steady increases in farm/cash incomes, it becomes possible for farmers to increase their productivity and output by the increased use of productive purchased inputs to supplement their farm-supplied internal resources of land and labour. This growth of farm demand for inputs as well as for a widening range of consumer goods can and should provide an important stimulus to the growth of local manufacturing industries.

There is an all too common tendency to assume that there is inevitably a conflict between efficiency and equity in the choice of measures for promoting economic growth. It is probably true that an extreme preoccupation with equity, that has the effect of blunting incentives for innovation and for extra effort on the part of exceptionally energetic and capable individuals, can slow the development process. But the type of

inequalities which result from the sort of lop-sided pattern of growth that was described in Section 3 are of a very different nature. Furthermore, the apparent superiority of the technologies employed by producers in modern enclaves in industry or agriculture is often an illusion that results from taking an inappropriately narrow view of the development process and of the options that are available.

For most developing countries, structural and demographic characteristics necessarily limit the feasible set of choices among alternative strategies for fostering agricultural development. Specifically, the rate at which the agricultural sector can enlarge its use of fertilizers, farm equipment, and other purchased inputs is constrained by the rate of structural transformation and the associated rate of growth in commercial demand for farm products. To be sure, rapid expansion of agricultural exports can, especially for small countries, make it possible for farm households to increase their cash receipts a good deal more rapidly than can expansion in the rate of growth of domestic commercial demand for food and other agricultural commodities. Thus, this purchasing power constraint which conditions the strategy options that are feasible is not totally binding. Nonetheless, for most developing countries, a fundamental choice must be made between the progressive modernization of the entire agricultural sector and a "crash" modernization strategy concentrated on a sub-sector of large-scale, capital-intensive farm units that constitute an enclave of "modern" agriculture. Clearly, the comparative efficiency of those two alternatives should be assessed in terms of the relative costs of achieving the desired rate of expansion on a sector-wide basis. Large farm enterprises constituting an enclave of highly commercialized units can escape the sector-wide purchasing power constraint if they account for the bulk of a country's marketed output. And since they use relatively large amounts of capital as well as land, output per worker is much higher than the sectoral average. However, a concentration of resources and commercial sales within such a small sub-sector to foreclose the possibility of more widespread modernization. That is, the purchasing power and other constraints that condition the possibilities for increasing the productivity of the great majority of farm households will be even more binding than the constraint that is an inevitable consequence of the structural-demographic situation which exists.

When the alternatives are viewed in this wider perspective, it becomes clear that a strategy aimed at a more gradual but widespread modernization of the agricultural sector has notable economic as well as social advantages.<sup>a</sup> The economic advantages stem first of all from the substantial potential that exists for enhancing the productivity of the large amounts of labour, land and other internal resources already committed to the agricultural sector. That is, a strategy which emphasizes an appropriate sequence of divisible innovations, such as high-yielding varieties and fertilizers, which are capable of being used efficiently by small farmers and progressively adopted by the bulk of a nation's farm households, provides the least costly option for accelerating the sector-wide expansion of agricultural output along with its social advantages. By emphasizing the progressive adoption and spread of innovations that complement rather than displace a country's abundant resources of labour, together with the farming skills and knowledge already possessed by its farm population, the demands on a developing country's scarce resources of capital and foreign exchange are minimized. There is considerable empirical evidence which demonstrates that a strategy which fosters widespread technical change, adapted to the needs of the small farmers who necessarily predominate in these countries can result in a rapid rate of increase in the growth of output per unit of total inputs. The basic point is that a broadly-based agricultural strategy leading to fuller as well as more productive utilization of the resources already committed to the agricultural sector is of great importance in achieving rapid and relatively low-cost expansion of farm output.

A pattern of agricultural development that makes relatively moderate demands on a country's scarcest resources has a number of additional advantages that merit attention. By minimizing the agricultural sector's requirements for capital and foreign exchange, a strategy of progressive modernization permits more rapid advance in strengthening a country's economic and social infrastructure and in expanding its manufacturing and other non-farm sectors. Large quantities of those scarce resources are indispensable for industrial expansion and investment in a country's economic infrastructure. Much of this infrastructure, most notably the expansion of a country's road network and investment in education, are of

---

<sup>a</sup> The common tendency to assume that expansion of production by large-scale farm units is more efficient than a sector-wide expansion path based on wide-spread though gradual growth of productivity and output among small-scale farmers seems to be related primarily to a tendency to confuse technical and economic efficiency and to a grossly exaggerated view of the importance of economies of scale in agriculture. For a limited number of farm enterprises, e.g. production of hybrid maize seed, there are true economies associated with production by large farm units. For the most part, however, economies of scale at the production level do not become significant except with reliance on large tractors and other heavy equipment which are, by and large, inappropriate innovations until considerable structural transformation has occurred.

course of direct significance in fostering increased food production and improvements in nutrition.

The relatively equal distribution of income associated with a strategy of progressive modernization has other advantages. Inasmuch as the income elasticity of demand for food is especially high among lower income groups, assuring wide participation in the growth process strengthens incentives for expansion of agricultural production. This more rapid growth of effective demand, which is the basis for raising food consumption levels, also makes possible more rapid increases in farm cash income. In contrast, sluggish growth in effective demand for food is likely to slow the expansion process if increases in income are concentrated within the high-income segments of the population.

Agricultural progress implies changes in the behaviour of millions of individual farmers, both men and women, and depends on their decisions and their efforts. Governments can assist these changes, by creating new opportunities in technology and markets, not least by the provision of supporting services in infrastructure, research and extension. Thus, government action for promoting rapid and efficient expansion of agricultural production by small farmers must include measures which change their production possibilities by a combination of (a) agricultural research that generates technical innovations adapted to their needs and their limited cash income and purchasing power; (b) rural education and farmer training programmes to accelerate farmers' adoption of new possibilities; (c) investments in irrigation, rural roads, storage facilities and other types of infrastructures; (d) programmes to improve the marketing of farm products and the distribution of inputs; and (e) appropriate and consistent policies related to prices, taxation and land tenure. An approach such as this, which endeavours to create new opportunities for small farmers and encourages them in the exploitation of these opportunities, harnesses self interest and recognizes that the price mechanism fulfils a critical and complex communications function by harmonizing the separate decisions of many small farmers.

Where poverty is a huge and pervasive problem, not a matter of isolated pockets, the possibilities for alleviating deprivation may be limited, in spite of an appropriate overall agricultural development strategy coupled with specific programmes to increase the productivity and incomes of the poor. Therein lies the importance of the other elements of a food and nutrition strategy that are considered in later sections of this Section. Furthermore, it is well to emphasize not only that planning is part of the political process — conspicuously so when its stated objective is to reduce nutritional and other forms of deprivation — but also that planners have an essential political role to play. That is, by contributing to a better appreciation of the reality of prospects for achieving nutritional goals by policies and programmes that are feasible within the resources constraints faced by a particular country,

planners can influence the mobilization of the political support required for the adoption and implementation of food and nutrition policies and programmes. Nevertheless, for most developing countries, economic as well as political constraints will be limiting, especially for large-scale programmes of supplementary feeding or other types of direct intervention.

#### 4.2 Food policy planning

If other nutrition-oriented measures succeed in increasing the effective demand for food by those previously inadequately fed, then food policy should be designed to ensure that this demand is satisfied by increased supply. Agricultural price policy is a particularly important aspect of national planning which influences food production as well as consumption and affects all segments of the population. Ill-considered measures to hold consumer prices low can have a depressing effect on the expansion of agricultural output, and if efforts to control prices are concentrated on foods which are basic staples in the diets of low-income households, this can lead to a distortion in the relative profitability of producing various foods which will have especially adverse effects on production of foods critical for the nutrition of the poor. It is equally clear, however that a policy aimed at stimulating increased production by supporting prices above an equilibrium level will be a severe hardship on low-income households which often devote about 50 percent of their income to the purchase of food.

The crucial importance of fostering technical improvements in agriculture derives from the fact that the resulting increased productivity makes it possible to expand production and maintain reasonably stable or even declining food prices at the same time. Because the demand for food is very price-inelastic, if supplies are less than effective demand, even by a very small margin, this will lead to a sharp increase in food prices with very undesirable consequences, including a deterioration in the nutritional status of low-income households.

But simply maintaining relatively stable food prices is not enough. In fact, in order to hold down food prices a government might pursue policies to hold down effective demand by slowing the rate of increase in employment. An industrial policy which mainly promotes the expansion of the industries which generate little additional employment because the capital required per worker is high, together with the adoption of inappropriately capital-intensive technologies within particular industries, reduces the risk that sluggish expansion of food production and commercial sales will lead to sharply rising food prices. But the social costs of maintaining price stability in this way are high. The slow growth of job opportunities in the formal sector means that the incomes of workers in the urban informal sector and of agricultural labourers remain low, and that the

numbers of unemployed and under-employed are likely to increase. Thus the equilibrium achieved between marketed supplies and effective demand is at the price of progress in improving the nutritional status of the income groups dependent on purchased food.

Even when the average rate of increase of food production is sufficient to support rapid expansion of non-farm employment and increased consumption by farm households, peaks of sharply rising food prices are to be expected when the harvest is poor because of drought, floods or other hazards. A buffer stock programme and a flexible and well conceived food import policy can lessen the adverse consequences by moderating the magnitude of the year-to-year price fluctuations.

It is important to recognize that administering a buffer stock scheme and fixing prices at which commodities will be bought and sold by the government pose difficult administrative and analytical problems. Data relating changes in food production and consumption to changes in incomes and food prices are needed to provide estimates of supply and demand elasticities. These estimates will assist in administering a buffer stock programme and in making decisions on the allocation of scarce foreign exchange for food import to offset a shortage of domestic supplies. Estimates of future changes in agricultural production are subject to a sizeable margin of error because of uncertainty about the effects of output-increasing innovations and weather factors, as well as the responses of farmers to price changes. It is possible to estimate changes in effective demand with somewhat greater assurance, provided that the estimates are based on a sufficiently disaggregated analysis which takes into account changes in the incomes of different socio-economic groups, especially around and below the level of intake adequacy.

Finally, where foreign exchange earnings from exports permit imports of food so that food supplies can reach higher levels than they would without trade, measures that limit the expansion of food crop production because of the emphasis on cash crops might be justified in the aggregate. However, the aggregate view needs to be qualified by consideration of just whose incomes and whose food intakes might be affected. Thus, while overall a trade policy might be preferred to a policy of regional food self-sufficiency, complementary programmes to counteract adverse distributional effects may be essential if nutrition problems are not to be aggravated.

The preceding discussion has stressed the need to ensure that the increased effective demand of those who were previously inadequately fed is satisfied by an expansion of food supplies. Food policy will thus be especially concerned to avoid price increases which have undesirable nutritional effects. While earlier sections of this report have stressed especially the importance of considering the effects on income distribution of different development strategies — including measures to boost food output — it is always the case that consumer intakes are also influenced

strongly by food prices. This is true both for those who depend solely on food purchases and for those who retain part of their own produce for domestic consumption — though a given price change is likely to have opposite effects on these different classes of consumers.

It is also important that food policy be concerned with influencing the composition of the foods produced and the processing techniques employed so as to improve the nutritional quality of the diet of all income groups (which was referred to in Section 3 as the “second element” of a food and nutrition strategy).

Not all campaigns to encourage the production of nutritious foods are necessarily desirable, even on purely nutritional grounds. In particular, the increase in production of one food might be at the cost of a fall in the production of other foods which, overall, may mean a reduction in the food value of the total output, i.e., in the number of people who could be adequately fed from that output. For example, the production of meat through feeding of grain to livestock is an inefficient way of utilizing foodgrains and is inappropriate as a measure to reduce malnutrition. Generally, increased production of animal foods, as a measure for combating malnutrition, should be discouraged, except where farm animals can be pastured on otherwise non-productive land or fed farm wastes.

Another important example of successful expansion in production which has had adverse effects on nutritional quality is offered by the impact of the Green Revolution, particularly the spread of high-yielding varieties of wheat in northern India. The higher productivity of the new varieties has sharply increased the profitability of that crop which has resulted in a shift of crop acreage away from the legumes and oilseeds which are of great importance in supplementing the vitamins, minerals and essential amino acids available in a predominantly cereal diet. This combination of cereals, legumes and oilseeds has been primarily responsible for maintaining levels of nutrition in the tropical zone through the ages, a fact reflected in the common practice of alternate row sowing of these three crops. Although the displacement of pulses by wheat has lowered the nutritional quality of the resultant output, it should not be overlooked that the total output of protein and calories has been increased because of the high productivity of the new wheat varieties. There is now clearly an urgent need to achieve higher productivity in legumes and oilseeds in order to make them more attractive to producers without having to raise their prices substantially. This example illustrates the importance of orienting agricultural research and extension activities to promote expanded production of commodities which all enhance the nutritional quality of the national diet.

The breeding and promotion of high quality maize and other cereals (i.e., with an altered pattern of nutrient content) has often been advocated for such reasons. This approach involves a not inconsiderable cost, however, because a more single-minded emphasis on raising the level and reliability of



yields of palatable varieties with good storage characteristics can be expected to have a greater impact on production. In general it can be stated that increased yields providing more food and more calories deserves a much higher priority than small changes in the quality or even quantity of protein in cereal crops.

The pattern of foods available and consumed can also be altered by tax and subsidy policies. Taxation of products low in nutritional value can be used to discourage expanded consumption of such foods, and thus divert food demand toward items which will, in general, yield greater nutritional benefits. Direct subsidies, preferential taxes and the like can be used in the opposite way, to foster the demand and supply of desirable foods that can be marketed at a price the poor can afford. At the very least, a strong case can be made against making available subsidized loans and other government assistance for the expansion of a food industry which is modern but which results in adverse nutritional effects. Finally, effective government regulations controlling food processing and labelling can protect those who rely on purchased foods from low quality or even harmful products and help them make wise selections.

#### 4.3 The basis of a nutritionally adequate diet

The above discussion has assumed that there is a nutritional basis for food policy, i.e., it assumes that it is possible for the nutritionist to say that the effects expected to result from particular policies will be desirable or undesirable, and how important they are. There has been a great deal said about the desirability or otherwise of changing the patterns of food supplies in particular ways. Some of the more significant propositions in this area are examined below.

In earlier years, high levels of protein in the diet were considered essential and undue emphasis on protein and the so-called "protein gap" led to undesirable approaches in national and international efforts in the field of food and nutrition. On the other hand, the recent scaling down of "safe levels" of protein on the basis of the latest scientific evidence (5) has led to the mistaken belief in some quarters that proteins are unimportant. This has led to understandable confusion among planners. It is essential to put this matter in proper perspective and to emphasize that a great deal of malnutrition, due to inadequate intake of protein as well as to vitamin and mineral deficiencies, still exists in the world. However, in most cases, these deficiencies are the result of inadequate intake of *food*, being thus unavoidably associated with inadequate intakes of energy.<sup>a</sup>

---

<sup>a</sup> Efficient utilization of dietary protein depends on an adequate intake of energy. See reference (5) for discussion of this important issue.

A diet based on appropriate proportions of cereals, legumes, green vegetables, oils and a small quantity of food of animal origin will supply all physiological needs.<sup>a</sup> In areas where the staple crop is particularly low in protein — cassava or plantain, rather than a cereal grain, for example — a larger proportion of foods rich in protein and fat may be needed, especially in the diets of young children, infants, and pregnant women.

The present trend in affluent societies is towards over-consumption of energy in proportion to needs, and to consumption of relatively large quantities of foods of animal origin and of fats and sugar. This pattern is also evident among higher income segments of populations in many developing countries. This trend is due not only to the palatability of such diets and the higher social values attached to them, but in part to a general urge to adopt a pattern of diet which was regarded as responsible for the eradication of undernutrition and malnutrition in developed countries. The dietary pattern in the developed countries has no unique advantage for the health and nutritional status of man. There is, in fact, a definite need to discourage increased effective demand for animal fats and refined sugars that has heretofore accompanied socioeconomic development. As noted earlier, these consumption patterns in affluent societies are associated with increased incidence of dental caries, obesity, heart disease, and diabetes.

An important distinction must be drawn between the application for planning purposes of *requirements* figures — which are estimates of the mean value and range of variability of the physiological needs of individuals — and *recommended intakes* — which are levels higher than the mean requirement and which are considered to be adequate for almost all the individuals in a population. Technical guidance in these matters is available in FAO and WHO reports (references 5 - 8).

In practice, planning will need to have detailed regard for the biological availability of nutrients in different diet patterns seen in relation to the physiological requirements of the population and the influences on nutritional requirements of such factors as parasitic and infectious diseases, exceptional demands for physical work, and climatic stress.

The need for some essential nutrients, especially the trace minerals, has not been quantified accurately. Also, their occurrence in plants is markedly affected by growing conditions including the composition of the soil and water. Experience indicates that the risk of deficiency or excess of food

---

<sup>a</sup> The specific requirement for animal foods is to supply vitamin B-12. If the needs for vitamin B-12 were met by means of food processes involving selected bacterial or mould systems (e.g., *tempeh* from soybeans), there would be no mandatory requirement for foods of animal origin. However, animal products are good sources of a variety of essential vitamins and minerals, as well as protein and fat, and nutritional adequacy is more easily achieved if the diet includes at least small amounts of those foods.

factors is greatest where there is heavy dependence on a very narrow range of foods; planning should therefore encourage variety in the spectrum of foods made available to the population.

Frequently in the past, attempts have been made to assess the magnitude of the nutrition problems of individual countries by comparing levels of food supplies calculated from food balance sheets with aggregated estimates of population requirements. The value of such calculations is slight since they do not, by definition, take into account the distribution of supplies throughout the population. They therefore indicate neither how many people are malnourished, who they are, nor even — if supplies exceed requirements — whether there is or is not any malnutrition at all.

Effective nutrition planning needs to start from the identification of people who are malnourished and the nutrients they are short of. Estimates of percentages of individuals and households with nutrient intakes below requirements can be used, but only in combination with other indices of nutritional status, as a basis for such a diagnosis.

#### **4.4 Health strategies and direct measures for nutritional improvement**

To the extent that acceptable measures cannot be found to reduce the basic causes of malnutrition, the immediate condition of the malnourished can still be improved through health strategies, nutrition education, and direct intervention programmes. Some of the direct intervention programmes, particularly those involving food aid, are costly and make large demands on technical and administrative manpower, and their effectiveness needs to be considered in light of this. Concern for reducing deprivation does not necessarily lead to the conclusion that it is always the most seriously deprived who should be the primary target of strategies and programmes. Maximizing the reduction of deprivation under the constraint of scarce resources might mean, initially, postponement of programmes directed to those who are the most deprived in favour of alternative investments of resources that may yield only marginal social benefits, or none. While such choices are clearly difficult from human and political viewpoints, they might initially prove unavoidable.

The programmes described in this section should not work in isolation. They should be co-operative efforts of all relevant services available in the community, i.e., health services, agricultural extension, community development, schools, etc., since, particularly in regard to nutrition, the skills and responsibilities are complementary. It is also emphasized that the success of such programmes will depend very much on the extent of community involvement in establishing priorities and encouraging participation. Shared perception of need and a unified message will go far in avoiding both under-utilization of services and wasteful overlapping of efforts.

*Food fortification.* Where there is a widespread deficiency of one essential nutrient, or a narrow group of such nutrients, legislated fortification of food or water may be an effective measure. Programmes of demonstrated effectiveness are fluoridation of water as a preventative of dental caries, and iodization of salt in regions where goitre is endemic. Food fortification with vitamin A is also promising. These programmes should not be viewed as cheap substitutes for required basic improvement of the food intakes of people, but rather as ancillary measures designed to ameliorate as speedily as possible conditions that often cut across social and economic strata.

A valid need for the nutrient in question, specifically to correct an existing nutritional deficiency, should be established before fortification is considered. If this measure is intended, for instance, to correct protein quality or concentration in a given item of food it should not be recommended where the overall lack of food, and thus food energy, limits the utilization of the added nutrient. National resources might better be directed toward increasing the supply and effective demand for cereals and grain legumes than, for example, lysine fortification.

The vehicle fortified must be used consistently by the relevant segments of the population; this means that fortification programmes can be planned only with adequate knowledge of the distribution of frequency and amount of usage by consumers at all income levels. The amount of nutrient added must provide an effective supplement for low consumers of the vehicle, without contributing a hazardous excess to high consumers. Technological development is required to guarantee that the nutrient is retained in available form to the point of use, and the carrier must be produced in a relatively small number of facilities that can be monitored adequately to assure compliance. The fortified substance must be one that is purchased from these central sources by almost all users in need of the nutrient(s).<sup>a</sup>

The cost of fortification must not raise the price of the food beyond the reach of the population in greatest need: thus, a country may need to be prepared to subsidize such a programme. An adequate system for supervision and control is indispensable for the effectiveness of food fortification programmes, and the cost of this should be taken into account in the course of planning.

*Supplementary foods and feeding programmes.* Supplementary feeding programmes are a direct measure for providing the most deprived population groups with the additional food that they need to satisfy their minimum requirements and which they could not obtain otherwise. These programmes do not, however, correct the underlying problems and may

---

<sup>a</sup> For more details, see reference (2)

even favour their perpetuation by relieving the sense of urgency and thus diverting attention from the need to implement more fundamental measures. Because of this, and because great expenditure is involved for efficient management and supervision, these programmes should be limited to population groups in which need is documented and effectiveness is reasonably assured. They should also be limited in time for individual beneficiaries, and plans must be made at the outset for the orderly termination of programmes when sustained progress can be foreseen in correcting the basic problems which created the need.

The weaning period has proved to be one of the nutritionally most critical times of life. At about 5 to 6 months of age, breast feeding is no longer adequate to meet the infant's nutritional needs. From this time, until about 3 years of age, when the child can join the family in eating the ordinary family diet, special infant foods are required. In the industrialized countries cow's milk and commercial infant foods are used, but these are beyond the reach of the population in developing countries. Efforts have been directed towards the development of nutritious, low-cost weaning foods based on locally available raw materials and adapted to local food habits. These foods are composed largely of plant materials prepared as flours, with or without the addition of small amounts of foods of animal origin and vitamin and mineral concentrates. They can be of value for populations with cash incomes living mainly in urbanized areas, but they cannot reach efficiently rural families on a subsistence economy who frequently are also in great need. Weaning foods can be produced on an industrial scale and sold through commercial channels, with or without government subsidy, or distributed in supplementary feeding programmes. More attention might well be given to development of formulas for weaning foods that can be prepared in the home by combining locally available foods to produce nutritionally balanced mixtures of a texture suitable for infant feeding.

The foods to be used in supplementary feeding programmes, in addition to meeting nutritional and management criteria, should be considered in the context of the overall food and nutrition situation of the country or region. These programmes often need a formal educational component, particularly those involving infant feeding, and always should provide an opportunity for teaching, by example, the food components of an appropriate and nutritionally adequate diet. It is suggested that a specified portion of the total cost of such programmes be allowed for education purposes.

Specific nutrients can be supplied in much the same way as foods and the same general considerations apply. The distribution of iron to pregnant women and of vitamin A to children at risk of deficiency are good examples of sound programmes of this nature. However, there is a need to guard against indiscriminate distribution of nutrients (multi-vitamin pills, for instance) which have not been clearly justified on nutritional grounds. This subject is discussed in more detail in a recent publication (9).

Supplementary feeding programmes cannot be expected, as is often supposed, to correct the more advanced clinical forms of malnutrition. These conditions will require special programmes, including home care, intensively supervised semi-ambulatory treatment in rehabilitation centres, and hospitalization, all of which are very expensive. Efforts obviously should be directed toward prevention of severe malnutrition by early detection<sup>a</sup> and care of subjects at risk.

More details on the subject of supplementary feeding programmes can be found in a publication of the World Food Programme (10) and in a recent Protein Advisory Group (PAG) Bulletin (11).

*Control of infections.* Infectious diseases are an important conditioning factor of moderate forms of malnutrition but, even more importantly, they precipitate severe forms of malnutrition. Under conditions prevailing in poor countries, the child's body has been likened to a "leaking bucket". Diarrhoeal diseases, other communicable diseases and intestinal parasites often cause greater and more rapid nutrient losses than can be compensated by food intake. The magnitude and relative importance of the disease-induced nutrition problems, such as failure to eat, withholding of solid foods, poor digestion, and malabsorption, are topics requiring further study, but the sum of the effects is an additional drain upon a body whose nutritional reserves are already low on account of inadequate food intake. The outcome is severe malnutrition.

The effect of health programmes aimed at preventing the nutritional wastage from communicable and parasitic diseases is usually far more enduring and less costly than more direct nutrition interventions. These measures are to some extent alternatives but they may also be complementary. The health approach has several advantages. First it is feasible to deliver immunization programmes, potable water, and similar health services to large populations covering a wide spectrum of social and age groups, which is rarely true of supplementary feeding programmes. The logistics and organization of health services usually exist in the infrastructure, so a portion of the costs is already underwritten, or they are not difficult to build afresh. Finally, health services are less commonly subject to misdirection or misuse than are massive food distribution schemes.

*Maternal and child health activities.* Malnutrition affects all age groups, but the major impact is on mothers and small children, particularly in the most deprived populations. It is logical, therefore, that intervention and

---

<sup>a</sup> The use of growth charts in child care programmes can be very useful for this purpose. A growth chart for international use can be obtained from Nutrition, World Health Organization, 1211 Geneva, Switzerland.

health programmes have been concentrated on these age/sex groups in urban poverty areas and in rural areas. It is, of course, desirable that the various services — post-natal care, control of infectious diseases, nutrition, etc. — should cohere into a unified programme and that the structure of administration should therefore be designed to allow this. The activities incorporated in a given programme will vary according to the level of development of the national and local health services and qualifications of the personnel responsible for implementation. The programme may therefore contain only a few basic activities (such as immunization and emergency health care) or may include a complete battery of health activities. These concepts are discussed in more detail in two recent documents (12) and (13).

A family planning programme is commonly integrated with mother and child care services under the overall umbrella of family health. Several studies have shown that the nutritional status of children in a family is closely correlated with family size and that serious cases of malnutrition are commonly encountered among children of high birth order. Similarly, the nutritional status of mothers is greatly influenced by parity and intervals between successive births. These findings clearly support the need for including family planning among measures for improving nutritional status. It is also recognized that high mortality among young children is a deterrent to acceptance of family planning measures. Thus, improvement of nutritional status becomes a measure for, and an outcome of, strengthened family planning activities and is a strong argument for the integration of nutrition services with family planning programmes.

*Nutrition education.* One aspect of nutrition planning that needs to be given more attention is the formulation of programmes to encourage a desirable dietary pattern and to stimulate effective demand for appropriate food. Foremost among such measures are nutrition education and food promotion. The fact that nutrition education is carried out by several ministries (agriculture, health, education) and may also be a component of the programmes of non-governmental welfare agencies commonly impedes planning and implementation of effective nutrition education programmes. First of all, decisions should be taken on the objectives of the nutrition education at an interministerial level to ensure that the programme is, in fact, attempting to achieve the changes in food demand desired by the nutrition planners. Second, each ministry must decide on how it will implement the programme and include in its budget the funds needed for this. Factors that need to be clearly defined are the content of the message, the target audience, and the media to be used for its diffusion. This appears obvious; it also appears simple. However, in order to achieve this, a complete re-orientation of the philosophy and operation of most ongoing nutrition education programmes in developing countries will be needed. Emphasis should be on complementing existing diets, not on imparting a

mass of general information on better nutrition. Messages should be designed specifically for each target audience. Several different communications media should be used and messages received via the different media should be planned to complement and reinforce each other.

One priority area for nutrition education is the protection and promotion of breast feeding. A decline in the length of time mothers breast feed their infants is a widely observed phenomenon in the industrialized countries and in the urban areas in developing countries. The same trend is occurring in rural areas in some developing countries. Early weaning under the conditions that prevail in the developing countries is one of the main causes of malnutrition in the infant. Breast milk not only provides energy, protein, and other essential nutrients for the infant at a lower cost than any alternative food, but also contains specific antibodies against infection and, very importantly, it is not a vehicle for transmitting infectious disease in an unhygienic environment. Governments should therefore encourage the use of this valuable food resource and include programmes for promotion of breast feeding in their nutrition planning.

Governments should also review their policies on commercial advertising of food products to see that these conform to their objectives concerning nutrition education and the promotion of appropriate foods for specific target groups in the population.

#### **4.5 Complementarities among the elements of strategy**

Since the implementation of programmes related to the three elements of a food and nutrition strategy requires resources which are in scarce supply, they are to some extent competitive. It is also to be emphasized, however, that there are important complementarities in the interrelations among the various elements.

There are, for example, highly significant complementary relationships between an agricultural strategy aimed at the progressive modernization of the mass of the rural population and the health, nutrition, and family-planning programmes examined in the preceding section. These effects derive from their combined influence on social and attitudinal changes that are critical to economic progress and the reduction of poverty. The success of a broadly based agricultural strategy depends on the creation and strengthening of a variety of institutions — extension programmes and training centres for diffusing technical knowledge, irrigation schemes and other associations that enable farmers to coordinate their work when group action is advantageous, young farmers' co-operatives, and many others. Furthermore, the changes in the rural power structure that can be expected to result from broad participation of the farm population in improved income-earning opportunities has important implications with respect to the



political and financial support for rural schools and other institutions that serve farming communities.

The institutional and attitudinal changes induced by wide participation of the farm population in economic and technical progress can also be expected to make an important contribution to increasing the coverage and effectiveness of health, nutrition and family planning programmes in rural areas.

It has been argued that linking the health, nutritional, and family planning services offered by rural clinics and maternal and child care centres is likely to increase the attractiveness and effectiveness of each. In particular, the attitudinal changes resulting from reduced infant mortality and improved nutrition and health are likely to increase receptivity for the idea that family size can, and should, be determined by conscious choice. The evidence available also suggests that an agricultural strategy, which leads to broad participation in opportunities for technical and economic advance, a proliferation of supporting service and communications networks, and rising aspirations among the rural population, helps to create a more auspicious climate for the spread of the knowledge and motivation essential to the success of family planning programmes. More generally, concurrent changes in health, productivity, and incomes contribute to the modification of the "culture of poverty" which is frequently a major obstacle to economic and social progress.

There remains the danger that, even with broadly based development strategies, the poor will continue to be excluded from sharing in the benefits. The reduction of malnutrition requires that the economic, social and political weakness of the poorest be countered by policies explicitly designed and pursued for that purpose.

## **5. FOOD AND NUTRITION PLANNING AND ITS IMPLEMENTATION**

### **5.1 Analysis of the nutrition problem**

Nutrition planning starts with the identification of the nutrition problem in terms of who is malnourished, in what ways, in what circumstances, and why. Although complete data may not be available to identify all malnourished groups, or to estimate accurately their numbers, or the extent of their deficiencies it must be stressed that lack of complete data need not inhibit the initiation of planning decisions and the choice of strategies. Further data collection and analysis would no doubt contribute to improved decision making and the improved design of policy measures and projects, but a start can be made from the information available.

It is, however, important to establish at an early stage the statistical

framework which defines the socioeconomic and demographic categories of the population and which will provide the basis for the definition and measurement of the components of the national nutrition problem. With this broad classificatory framework established, existing data and new surveys may be organized systematically. An example of a broad outline classification is given in Annex 1 (14). An approach to the analysis of the national nutrition problem might begin by specifying what was known about the incidence of malnutrition in each of the classes listed. Initially, very little might be known about some categories but the existence of a serious problem would no doubt be recognized and the evidence about its characteristics and magnitude could be analysed.

The formulation of such a classification scheme should be undertaken co-operatively by nutritionists, who can contribute general knowledge about the probable existence and nature of nutritional problems; health and social workers, who have local knowledge of problem areas; and planners, whose concern is to ensure that the groups identified are potentially accessible in administrative terms. A statistician/demographer will be needed to advise upon the details of data acquisition and processing. This procedure will identify areas and groups which, by observation and experience, are already known to have problems and will make it clear that the development of a sampling frame is required.<sup>a</sup>

The decision-making required for the formulation of an effective food and nutrition strategy depends on an analysis of the existing situation presented in terms that are operationally meaningful to the planner. Thus, the proximate cause of ill health might be said to be low intakes of a particular nutrient in a certain segment of the population, but such a diagnosis has limited operational meaning. It is also necessary to know why the intakes are low and which groups are affected. The description of nutritional problems must be in terms which make it possible to relate nutritional deficiency patterns to the spatial, ecological, and socioeconomic and demographic characteristics of communities affected.

As noted earlier, it is necessary to distinguish between immediate and ultimate causes of an identified nutrition problem. Thus, for example, the immediate cause may be a low intake of a particular nutrient and this may lead to the suggestion of simple low-cost measures for supplementary intakes of, for example, vitamin A, iron, or iodine. The ultimate cause might be inability to purchase adequate amounts of foods containing that nutrient, lack of land or labour resources with which to grow such foods, or

---

<sup>a</sup> A random sample of a particular percentage of the population does not constitute a rational basis for a national nutrition survey since the objective is not simply to make an accurate statement about the magnitude of the overall problem, but rather to establish the epidemiology of malnutrition and to offer a description of the malnourished in functional terms.

deficiency of minerals in soil and water.

It is important that the malnourished groups should not be too narrowly defined. It is commonly believed that malnutrition among children of preschool age and pregnant women is "the nutrition problem". Indeed, this is often the case, and clearly there are intervention measures which can, and should, be efficiently directed towards these specific groups. However, this narrow view of malnutrition tends to restrict the range of measures selected to those relevant to treating obvious symptoms, rather than to those which correct underlying causes. A definition of the problem which recognizes that child malnutrition is not the only problem but, rather, the most easily demonstrated and measured symptom of nutritional deprivation of the family or of a particular class of families will lead to the identification of a broader range of corrective and preventive measures and the recognition that there are operationally significant differences in the situations of different categories of families. Functional classifications of malnourished groups can be expected to reveal that the incidence of most nutritional deficiencies — and especially of protein-calorie malnutrition — is greatest among the most impoverished groups in both rural and urban areas and that, within these, it is most manifest among women and young children.

Particularly in view of the need to assess the nutritional impact of general economic development policies, an important aspect of the analysis of the nutrition situation is that of the prediction and detection of trends. The likely course of evolution of the problem needs to be foreseen. Thus, the concept of a functional classification of the population is of fundamental importance since it is information about the changes in the numbers of people in different classes which is required, together with some measurements which, taken regularly, will demonstrate the severity of the problem within each defined group. In some communities there may be susceptibility to hazards such as poor harvests or non-availability of seasonal employment. Where such hazards are identified there may be a case for routine reporting of nutrition indicators as described below (see section 5.5.)

For the identification and design of measures relevant to alleviating the malnutrition of specific communities, quantitative studies of the nature and magnitude of their malnutrition will need to be illuminated by qualitative studies. Such studies will assist in establishing, for example, the role of feeding habits and beliefs, cooking and sanitation, seasonality in disease patterns and food supply patterns, mothers' household work and employment, etc., in contributing to the problem of malnutrition. Thus, they will suggest ways in which the problem might be approached and assist in the early rejection of irrelevant or inadequate proposals. In addition, they should assist especially in the design of direct intervention programmes.

## 5.2 Identification of relevant measures

In countries where data are scarce, a simple statement should be prepared which presents the evidence available on the existence of malnutrition. This may not be comprehensive in its national coverage and it may not reflect balanced sampling. Moreover, various items of data may not relate directly to one another, perhaps having been collected at different times. Even so, such a statement is likely to indicate communities or regions which have problems, and decisions can be made about which problems to explore further, and how to go about this. In some countries, however, the data will clearly indicate, define, and provide magnitudes for known problems. The important next step will be to identify a range of alternative, or complementary, measures for dealing with them.

First of all, there are likely to be programmes and strategies that already have an impact in the area, and these will need to be appraised. They may themselves be sufficient, or they may warrant expansion, redesign, or curtailment. In addition to programmes designed directly for their nutritional objectives, there will be other programmes having important nutritional effects. Road programmes, for example, may reduce isolation and seasonal food shortages or may bring subsistence holdings into the cash economy – with important, but not necessarily always beneficial, effects on nutrition. Similarly, land registration, irrigation or ranching schemes or programmes to introduce new crop varieties or support small farmers may have short- and long-term nutritional implications.

Such a review could then be the basis from which the current and future prospects of malnutrition for the socioeconomic group most affected could be appraised to determine what can be done. Government ministries and other agencies should be invited to respond to this question in the light of the review of the situation as proposed above. Their proposals should be examined for their relevance and, in the short and long terms, predicted impact, separately and together, and appraised in terms of their overall effectiveness in relation to what is required. In many instances, such an approach, carried out with effective appraisals of problems and proposed solutions, will reveal that the proposed solutions are unlikely to make a significant impact on the problems. Thus, a re-examination of the issues will be called for and a renewed search for measures which will get to the heart of the problem.

What is important about this procedure, and what is different from what generally happens, is that not only are different measures – whether directly nutrition-orientated or not – appraised for their nutrition impact, but that the overall impact on nutrition of the totality of the measures and strategy adopted is reviewed. In exploring the need for, and the possibility of, increasing the effectiveness of these measures, it may be possible to

identify other measures which are even more fundamental and effective. But for planning to proceed in this way, organizational changes in the structure of planning may be called for, along the lines discussed below.

### 5.3 Organizational requirements for food and nutrition planning

Earlier discussion has revealed, first, the need for a means of ensuring that the planning process takes a realistic view of the nutrition problem, the factors governing its emergence, and the measures available for tackling it; and, second, the need for institutional encouragement of co-ordination in planning and implementation — in the choice and balance of the overall pattern of action and in the harmonization of the activities of the implementing agencies.

Typically, the administrative structure is now one in which ministries are in dialogue with a central planning body which determines the ministries' budgets and which is responsible for the articulation of overall development strategy on behalf of political authority. Individual ministries will have responsibilities for particular aspects of implementation: the ministries of health, agriculture, and education especially are likely to have such responsibilities. One of them, possibly the ministry of health, will be responsible for defining the nature and extent of the national nutrition problem. There may also be an interministerial committee to provide for the discussion and co-ordination of direct intervention programmes and to guide the collection, analysis, and publication of information about nutrition matters and, possibly, the work of a national nutrition institute.

Generally, however, there is not within this structure any specifically assigned responsibility for analysing the nutritional effects of development programmes or strategies which are not explicitly nutrition-oriented. It is unlikely, too, that the processes followed amount to a systematic and comprehensive identification and appraisal of alternative measures relevant to the pursuit of nutrition objectives.

There is a need, therefore, to provide for the function of overview. Responsibility, capability, and authority for overview need to be assigned to a body so placed that it can affect the decisions of the planning authority (ministry of planning, central planning body) with regard to the programmes and budgets of the ministries.

In practice, such a planning body (let us call it a food and nutrition planning unit) should be in a position to require the various ministries to join a dialogue and provide information on the nutritional impact and costs of their activities. It needs a capacity for independent analysis and it is further desirable that it should have the capacity to assist the ministries — singly or together — to identify, design, and appraise programmes. One of its major roles, too, will be to assist the ministries to build their own planning capacities and effective decision-making machinery by, for example,

developing appraisal and design criteria for programmes and projects. In practice, this also means that the unit should be financially independent of the operating ministries and act on sufficiently high authority for it to be taken seriously, both within the ministries and at higher policy-making levels.

The food and nutrition planning unit should seek to secure a shared view of the nature of the nutrition problem, overall and in its various aspects and local manifestations, and a shared understanding of the role that each ministry is to play in the overall process of nutrition planning and in the co-ordination of implementation. For these reasons, it will from time to time, be desirable to convene working groups attended by members of the various ministries which might also consider, on an *ad hoc* basis, specific components of food and nutrition policy. Such working groups might also bring in, as appropriate, people from other agencies — nutrition institutes, universities, etc.

The food and nutrition planning unit would need to have its own technical expertise and analytical capacity, but it may need also to draw on technical support groups in such fields as nutrition, public health, economics and agricultural economics, statistics, education and extension, management, and marketing.

The food and nutrition planning unit would report to the body responsible for overall inter-ministry co-ordination and national development policy making. It would prepare the briefings which ensure that sectoral plans come under scrutiny for their impact on the overall national nutrition situation. The composite of policies and programmes resulting from this process will be the national food and nutrition strategy. To some extent, this might be reflected in the preparation of a food and nutrition plan document, which might also be the responsibility of the unit, but this is not the essential feature of effective food and nutrition planning.

One important aspect of planning is its capacity to adapt to experience and to respond to the unforeseen. This capacity requires concern for the evaluation of policies and programmes and surveillance of nutritional status and of key variables which govern it. In brief, the food and nutrition unit would also advise on the policy directions desirable for the achievement of nutritional objectives; for example, the unit might have an overall responsibility for monitoring the effects of prices on the pattern and extent of malnutrition.

In the longer run, the unit would have a responsibility for a cumulative analysis of the overall national nutritional picture, its differences in different regions and its evolving patterns.

Where area-level planning is undertaken the food and nutrition planning unit might be required to assist the area-level planning unit in a way similar to that in which it would assist ministries. For effective communication between the food and nutrition planning unit and the ministries and

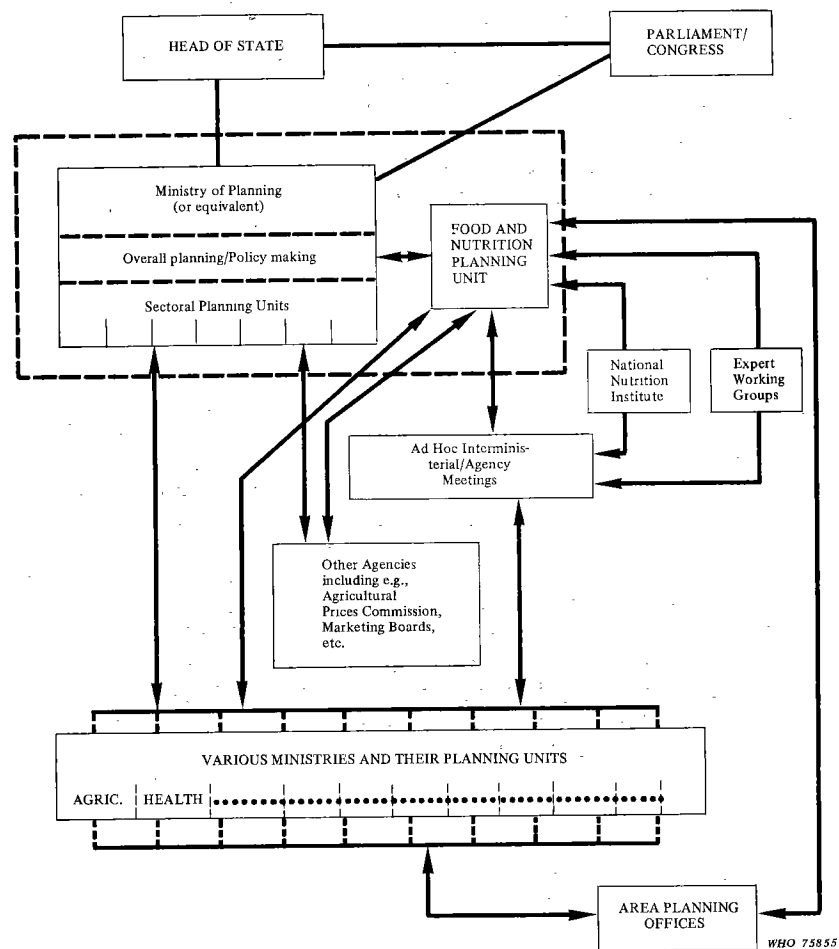
area-level planning units it would be desirable to assign regular liaison responsibility to an official, or small group, in each ministry and agency.

It can be seen that the general structure proposed above may be set up in a fairly rudimentary form, or expressed in a structure with a larger number of personnel and analysts depending on the circumstances of the country and its planning resources. The essential feature is to ensure an overall view of the problem and of the actions taken by separate ministries. It should not be forgotten, however, that the co-ordination to be promoted has a resource cost — it makes demands on analysts and on administrators. Hence, the degree of analysis and co-ordination that it will be worthwhile to aim for will be different in different countries. Clearly, there will be no formula which is appropriate for all situations. Figure 1 indicates how the organizational structure might appear in a hypothetical case.

#### **5.4 Data support requirements**

The requirements for data to provide a basis for planning, implementation, and appraisal of food and nutrition programmes have to be considered within the context of the overall data support system that may exist within a particular country. In many, if not most, countries sufficient data are available on which to base initial action in the field of food and nutrition. However, the data system in most countries is concentrated to a large extent on aggregate data such as national statistics on food production, supply, and consumption. Such data are indispensable in the general context of national planning but, as noted earlier, there is almost invariably a need for greater disaggregation to meet the particular requirements of food and nutrition programmes. In particular, distinctive problems related to both methodology and content give rise to specific needs in connection with the monitoring and surveillance of the food and nutrition situation and for the evaluation of food and nutrition programmes. These problems are considered separately in Annex 2.

FIG. 1. A POSSIBLE ORGANIZATIONAL STRUCTURE FOR FOOD AND NUTRITION PLANNING <sup>a</sup>



WHO 75855

<sup>a</sup> Although the food and nutrition planning unit is shown separately in the diagram it is assumed that in most instances it will be a technical unit within the ministry of planning (or its equivalent). As noted in the text, it is desirable that such a unit should relate directly to an official at a level higher than the sectoral divisions of that ministry.



In most countries, there are gaps in the data base required by the nutritional planner. Commonly, the largest number of data available concern food production, and the planner may be tempted to rely especially on these. Information on consumer behaviour, particularly in relation to prices and income, is usually very scanty. But in many countries a great many data also exist which are not used because they have not been conveniently published or assembled in one place. Collating such data in a central location is therefore likely to be a task that merits a high priority.

A further weakness of existing information is that the data are often analysed and presented in a form that is too highly aggregated to serve the needs of food and nutrition planning. This commonly applies to household survey data, for example. It may be possible, however, to carry out further analysis of existing survey material so as to clarify differences by socioeconomic class, by geographical area, by age, and in relation to other significant parameters, rather than to initiate new data collection.

The nature, scope, and detail of additional data to be collected for planning purposes should be seen as being directly proportional to the planning capabilities and the objectives of the planning process. It cannot be over-emphasized that there is as much, or more, danger that a planning process will be delayed excessively by a desire for collection of comprehensive data before planning begins as there is danger that planning will be undertaken with grossly inadequate information.

The nutrition planner is likely to need supplementary information such as data on certain indicators and variables pertaining to selected population groups. These data need to be collected in specific, intensive surveys that may often be non-recurrent. Such surveys should be planned to be consistent with the overall programme of data collection and integrated with it.

An evolving programme of survey activities should also be planned in relation to the development and increased elaboration of food and nutrition policies and their increasing data requirements. Such planning is necessary to avoid the wasteful production of highly complex data which cannot be utilized fully.

The use of special purpose surveys has the advantage that limited sample size allows control to be established over the data quality.<sup>a</sup> The sample selection itself becomes a question of adjusting the sample fractions to meet

---

<sup>a</sup> If this small sample is itself a subsample of a sample used for other purposes, the possibility exists of extrapolating results obtained from the smaller sample to the population at large by relating these data to other information obtained in the larger sample. This does not mean that the smaller sample is necessarily a simple random selection from the larger sample. For specific nutritional purposes, it may be desired to concentrate the enquiry in certain strata of the population, which can be defined in advance and which can be identified in the master frame, such as families of a certain size or economic condition.

specific data requirements for the strata of the population which are to be given particular emphasis. Thus, one may conceive of the data support system for nutritional purposes as comprising some indicators of both direct and indirect interest (e.g., food supply, socioeconomic status of the population, etc.) which are collected on a large scale, combined with more detailed indicators (e.g., food intake data) collected on a smaller scale and amplified by specific nutritional indicators (e.g., height/weight data), but which can be related to the indicators that are collected on a broader base. This is consistent with the approach which aims at a cumulative build-up of data of progressive detail regarding the nature of the nutrition problem and the context in which it is set.

In any proposal to create a data support system that would include provision of the data required for nutrition planning purposes it is important to give adequate consideration to two points: first, the creation of a suitable data bank and retrieval system that will enable comprehensive analyses to be undertaken with the data obtained for specific purposes and, second, accumulation of additional data necessary to provide a broad and balanced picture at the national level. Facilities for electronic data processing are now sufficiently developed for this purpose in most countries, and with the rapidly growing improvement in software facilities available the creation of an appropriately designed data bank and retrieval system for survey data is becoming a realistic goal.

It needs to be stressed, however, that the value of extra data should be examined in relation to the cost. Obviously, data collection must be valued for its contribution to the fundamental task of identifying and implementing policies and programmes that will have maximum impact in overcoming the most serious problems of nutritional deprivation.

### **5.5 Nutrition indicators**

Earlier discussion on the need to prepare a functional classification has stressed the need to identify the socioeconomic, demographic, and geographical groupings of the malnourished and the nature and degree of their deficiency. For this purpose, comparison of nutrient intakes and requirements of individuals and households can be used to provide estimates of the probability of deficiency of different nutrients which, in combination with other indices of nutritional status, might provide a basis for such a diagnosis. In practice, the data will need to be purposively collected and analysed if they are to indicate the incidence of deficiencies within defined groups of the community.

Planning will need to proceed from the diagnosis of a problem to the identification of measures which might reduce the magnitude of the problem. Malnutrition is unlikely to be eradicated by a single round of such

measures, however, and priorities will need to be asserted which specify the ranking order of desirability of different increments of improvement. Thus, the benefits from such increments can be compared to the costs necessary to secure each of them so that the most telling set of measures can be selected. Insofar as policy-making implies choice, the values which guide this choice must at least be implicit in the decisions which are made. However, an attempt to make them explicit should in itself give improved guidance to planners' concerns. This might be attempted through the construction of "need indicators" which would compare, for example, the relative value assigned to a positive increment in child growth in height of, say, 5 percent for children at the third centile of the growth standard and for children at the 30th centile. Clearly, the need indicator — the value assigned to an increment of improvement — should increase rapidly as intake and nutritional status decline.

Attempts to make explicit the relative value of a given reduction of PCM compared with say, a reduction of iron-deficiency anaemia would need to be approached from an assessment of the degree of impairment of human function which results in each case and their relative significance. Such an approach would necessarily distinguish between improvements accruing to different demographic groups, i.e., groups defined by age and sex. The value assigned to improvement might then, in part at least, need to take account of the wider social significance of improving the performance of particular subgroups.

Such an approach would not necessarily mean that only conditions of greatest deprivation would be targets for policy action. Benefits would be measured against costs. When costs were low — say for a water fluoridation programme — worthwhile benefits might be obtained readily and cheaply and thus justify the inclusion of such a programme in the overall package of measures, regardless of whether or not dental caries was judged to be a serious impairment. Similar reasoning might apply to other low-cost measures, such as the addition of minerals to salt.

Complementarity between public health and nutrition measures, especially, would need to be taken into account. These and other aspects of the problem of asserting priorities would, beyond the establishment of crude rules of thumb, need detailed consideration amounting essentially to research. The absence of a clearly articulated and explicit set of priorities in the sense discussed above does not make it impossible to plan worthwhile measures. However, at some stage, a more rational, coherent, and explicit statement of values and judgements will be required for efficiency in policy making and systematic effort, perhaps including research, is called for to prepare it.

## 5.6 Delivery systems for nutrition programmes

Nutrition programmes, however well formulated at the central level, cannot yield the desired results unless adequate machinery exists for their implementation at the local levels. In the past, many well-conceived nutrition programmes have foundered for lack of adequate attention to this factor. In situations where resources of material and trained manpower are limited, attention to details of implementation of programmes is critical. There must also be a mechanism which will ensure continuous mutual feed-back of information between workers at the field level and the central policy-makers and planners, so that necessary mid-course corrections may be made.

The institutional framework for the delivery of a nutrition programme will be determined by the nature and content of the programme. It will be advantageous to utilize as far as possible existing institutions and agencies for this purpose, while recognizing that some specific nutrition programmes (large-scale supplementary feeding programmes for children, for example) may need special arrangements. Programmes related to augmenting and changing the pattern of food production can appropriately be executed by the agricultural extension agency. In school meal programmes, the education department and the local teacher will have a prominent role to play. Other types of nutrition programme, especially those directed at small children and pregnant women, can be integrated with health programmes and carried out by health agencies. (In India, for example, the national programme for the control of xerophthalmia is conducted through the family planning programme; in Bangladesh, the same type of programme is carried out by field workers in the malaria and cholera control programmes.) In some developing countries, existing networks of child care centres and women's associations also can serve as useful channels for the delivery of nutrition programmes to children and mothers. The choice of appropriate institutions for delivery of nutrition programmes will naturally depend on local conditions and on such considerations as the relative out-reach, influence, and availability of trained personnel in these institutions.

Programmes directed solely to achieving nutritional improvements are not now supported by separate services within the relevant sectors as are, for example, maternal and child health services, pest control programmes, etc. There are usually no separate personnel to carry out nutrition programmes alone at the field level — nor is it necessary that there should be. The strategy of delivering nutrition services through a package of related activities, however, requires full integration of nutrition with other basic health, agricultural, and educational programmes.

In many developing countries, only a small proportion of the population at risk is currently being reached by these health and social services.

Correcting this situation should receive high priority if existing agencies are to serve as effective channels for the implementation of nutrition programmes. The components of a basic health package should be selected so that they can be carried out easily by health workers in the field who have had only limited formal education and training. Indeed, in most developing countries there is little prospect that adequate coverage of the rural population can be achieved without expanded, and more effective, use of such auxiliaries. A WHO/UNICEF document on alternative approaches to meeting basic health (12) discusses this important issue in considerable detail.

The success of many nutrition programmes will depend greatly on the cooperation of the community. Unfortunately, in the past, this factor has often been neglected, with the result that there has not been self-generating and sustained improvement. It is thus especially important to involve the community to secure their cooperation and participation in nutrition programmes.

### **5.7 Criteria for the evaluation of alternative programmes**

In this and preceding chapters much attention has been given to the difficult problems of selecting and designing policies and programmes so as to achieve the most rapid possible progress in reducing nutritional and other forms of deprivation. However, in considering choices among the numerous possibilities that exist for direct action to improve the nutritional status of specific target groups through publicly financed health activities and programmes of nutrition intervention, it is often worthwhile to employ a more systematic approach to comparison and choice among alternative programmes.

Of the formal economic tools available for assessing specific projects or programmes, cost-benefit analysis has severe shortcomings for the evaluation of nutrition or related programmes. These analyses are usually made in terms of valuations of "benefits" based on production and market price criteria. They thus accept and reinforce existing patterns of income distribution and their use could have the effect of exacerbating problems of under- and unemployment. While proposals have been made for procedures which take account of the received increments of income (15) and, thus nutrition benefits deriving from particular measures, the demands of such an approach may limit greatly its general application or require so crude a procedure that its application may still leave much to be desired. In practice, most countries will need to concentrate on identifying measures which are relevant. Refined comparison between alternative, potentially valuable measures may, for a while, prove impracticable or unduly costly, but alternative procedures should continue to be explored and appraised. There is a need to judge which programmes will be most socially beneficial,

and more systematic guidance is desirable than that obtainable from political hunches or arbitrary or well-informed social perceptions, individual or collective. The logic of cost-benefit analysis (i.e., the attempt to define the real costs of a measure and to compare them with its benefits) is sound and essential. But costs, if any, should be seen as the reduction of some people's consumption, and benefits should be seen as the increments of consumption by those whose situation is improved. These increments should be assigned values which may be other than the prices assigned by the market.

The approach of cost-effectiveness analysis can, however, provide an alternative crude guidance in the allocation of limited budgets and administrative resources. Some of the areas with which evaluation analysis should be concerned are estimates of:

- (a) costs of each alternative measure, and its effectiveness in terms of an enduring infrastructure, development of technical manpower, the containment of bureaucracy, and of possibilities of misdirection and misuse;
- (b) depreciation and renewal of equipment required in each alternative;
- (c) multiplier and spin-off effects of each alternative;
- (d) desirable technological and attitudinal changes that each alternative may bring about;
- (e) who will be benefited and how the ranks of beneficiaries will expand with lessening *per capita* cost.

Such an attempt to compare the returns to alternative projects per unit of budgetary fund is likely to be enlightening, if not conclusive. For major budgetary items, this is essential.

Among the costs to be weighed finally in selecting measures are the costs of continued dependence on external assistance, and some countries will no doubt weight this highly. Among the benefits, too, is the value of experience which allows subsequent improvements in the efficiency of resource utilization or a more widespread distribution of benefits.

The timing of nutrition benefits poses particular problems in comparing, say, the value of improving the nutritional status of a few children now as against that of improving the status of many in the future. In economists' terms, one might see the problem as one of minimizing the disutility of a stream through time of nutritional deprivation. But there remains the question of whether or not this disutility will be valued differently, depending whether it is in the present or at future dates.

The political acceptability, or otherwise, of measures will reflect perceptions of their costs and benefits as they are seen to accrue to different people. The measures which will be most acceptable will be those which secure their benefits at the least noticeable cost to others — especially those with power.

### 5.8 Training needs in relation to the planning and implementation of food and nutrition policy

Training and education are cornerstones of programmes for nutritional improvement. National, bilateral, and international bodies have arranged seminars and courses and prepared training materials for staff associated with food and nutrition programmes. However, comparatively little attention has been given to the effectiveness of this training in fitting the trainees to carry out their designated tasks effectively as part of the complex pattern of actions that are involved in improving the food consumption and nutritional status of deprived populations. Furthermore, there is often no structure to absorb trained professionals and make use of their expertise. It is for these reasons that, when food and nutrition plans and programmes are being formulated, attention should be given to defining the functions of the personnel needed to carry out these programmes, and training facilities should be developed to provide the numbers and types of personnel needed at each level and in each discipline.

The discussions in previous sections of this report have made it clear that strategies for development should include not only economic measures to combat deprivation but also specific nutrition intervention programmes and health programmes. This implies that knowledge about food and nutrition problems and possible solutions must reach equally effectively the two extreme points of the same integrated system, i.e., on the one hand the top government decision makers, on the other hand, the needy population.

The human resources required may be grouped broadly into the following functional classes:

- (a) those concerned with planning policies at national and sectoral levels;
- (b) those concerned with the planning, implementation, and administration (including surveillance and evaluation) of food and nutrition programmes and with inter-agency co-ordination at national and other levels. This will include personnel in ministries of agriculture, health, and education and in nutrition institutes, that is all those involved in programmes relating to food production, distribution, consumption, and biological utilization;
- (c) those concerned with the delivery of food and nutrition services, e.g., agricultural extension workers, other rural extension workers, teachers, staff of health services;
- (d) those concerned with co-ordination of these services at local level. This will include local government administrators, field staff of technical agencies (health, agriculture, education, etc.);
- (e) key personnel in each community (political, social, and religious leaders, etc.);
- (f) local auxiliary workers.

There is no global answer as to the best way of training these different

categories of personnel. Each country must appraise its present personnel requirements and decide how best to allocate available resources to provide the necessary training. It is, however, certain that several types of training will be needed. The Committee suggests that a meeting, or preferably a series of regional meetings, be organized as soon as possible, to review the content of existing nutrition training programmes and to make recommendations as to course content and techniques of communication to be employed.

The Committee's view is that priority should be given to training staff needed at peripheral level, i.e., the personnel concerned with delivery of food and nutrition services to the community. Much more emphasis needs to be given to training multi-purpose workers, to training their trainers, and to intersectoral training. These programmes should cover not only appropriate technical subject matter but also, equally importantly, training in communications techniques.

The training needs of personnel concerned with food and nutrition planning (i.e., the central and sectoral planners) might best be met through brief national workshops. Sectoral planners might benefit from short workshops held jointly with the national planners so that each understands the role of the other. Field managers need to be exposed to the same type of training as the sectoral planners, in addition to specific in-service training in their own technical field. The possibility of organizing very short (3-5 days) workshops by an international itinerant training team should be investigated and FAO and WHO should assist these efforts.

Training material for all levels is needed. FAO, WHO, and UNICEF should assist governments with the development of prototype training materials and instruction manuals. Appropriate material is also needed to orient community and auxiliary workers.

## **6. RESEARCH NEEDS**

The basic causes of, and cures for most of the malnutrition existing in the world today are social and economic. Therefore, primary emphasis should be placed on research related to these issues. The ordering of technical and clinical research must meet the criterion of relevancy, with highest priority being given to research projects, the benefits of which will accrue to people in greatest need and those who can be helped effectively. Research needs identified by the Committee have been grouped into several categories below; the sequence of presentation does not imply a rank-ordering of importance. As the situation varies between countries and regions, immediate priority must be determined locally.



## 6.1 Identification and analysis of nutrition problems in populations

The objective of this type of research is to provide reliable input to planners by improving the ability to identify sooner and more accurately who is malnourished and how severely, what may be the expected outcome of a given degree of deprivation, and whether or not the situation is changing. For these purposes it is necessary to develop better functional classifications of populations and methods for identifying the primary determinants of malnutrition for particular groups and for analysing the trends in numbers and severity of deprivation. The functional significance of various indices of nutrition/health status needs to be determined so as to establish levels of risk of dysfunction associated with particular values. (For example, longitudinal studies of the degree of dysfunction, in terms of morbidity and achievement of physical and mental capacity, associated with different levels of growth performance.) Research should be directed toward the development of simple and efficient "early warning" indicators and systems for identifying the population at risk.

More information is needed with respect to physiological levels, the range of individual variability and body storage functions for energy and for all nutrients, but particularly for those which are known to be implicated commonly in deficiency diseases. The objective here as regards planning is to establish scales of risk of dysfunction in relation to different levels of intake, which, coupled with other indicators, would provide scales of intensity of need for nutrition inputs. More and better data on food intake are required for this purpose, but these cannot be used effectively unless improved information is generated about the nutrient composition of foods and drinking water, including estimates of ranges of contents and effects of alternative production, processing, and preservation methods. The constraints imposed upon food consumption by such factors as bulk, palatability, and social and cultural influences should be determined. An analysis needs to be made of errors involved in measurements of food intake by individuals, particularly very young children, and by households, using different techniques to allow more accurate quantification of the distribution pattern of available food.

## 6.2 Programme development

Systematic research is needed on the nutritional and income distributional implications of food production and supply policies (agricultural land use, inputs and price policies, food import and export policies, taxation and subsidization, etc.); food distribution policies (subsidized distribution, processing and storage, transportation, etc.); and public health policies (health services, delivery in urban and rural areas,

nutrition and health education, family planning services, water supply and sanitation programmes, etc.). The effects of such policies must be examined in a disaggregative manner to assure that desired results are achieved for the deprived populations affected. To this end, criteria are needed for *ex ante* appraisal of nutrition and nutrition-related projects, in particular the development of checklists for project identification and appraisal.

### 6.3 Direct intervention programmes

Studies of the organizational aspects, impact, and cost of intervention programmes are urgently needed. (For example, programmes to be considered are nutrition rehabilitation at home and in centres, supplementary feeding, and periodical administration of required nutrients for prevention of anaemia and vitamin A deficiency.) The mechanisms and effectiveness of providing nutrition/health/agriculture/education inputs as integrated packages, in contrast to discrete and independent programmes, should be studied in depth.

### 6.4 Evaluation

Value systems need to be established in order to assess the comparative benefits achieved by various intervention programmes. For national coherent policy-making, the planner, and probably also the politician, must be able to attach explicit values to the degree of deprivation for each group so as to establish an ordering and ranking, or hierarchy of deprivation. This process would require a knowledge of the relationships between the "state" indicators and "need" indicators as described above, together with information such as typical profile studies, reports of health and social welfare workers, evidence of population drift and migration pressures, etc. Where there is a great number and variety of patterns, some statistical techniques such as a clustering or "nearest neighbour" grouping technique might be used in order to derive a taxonomy of deprivation and to reduce the task of ordering and ranking, which might then be carried out on patterns chosen as typical of a smaller number of taxonomic groups.

### 6.5 Political and organizational aspects

This area of research might be of interest to political and social scientists. Problem areas are, for example, the operation of planning and administrative structures and the extent to which political constraints upon effective planning and decision-making modify and are modified by the organizational structure. The dynamics of the planning/policy-generating

process need to be analysed, and the degree to which lack of adequate communication between planners and nutritionists constitutes a barrier to adoption and implementation of nutrition-oriented programmes should be evaluated.

In addition to delineating priority areas of research, it is necessary to assure that improved means are established to facilitate such research. While much policy-oriented nutrition research must be done in a country-specific context, the Committee strongly endorses the recommendation of the World Food Conference (in Resolution V) that an international mechanism be established within the United Nations system to aid in the co-ordination of such research. Such an entity is needed to reassess research priorities regularly, to collect and disseminate information on proposed, existing and completed research, and to serve as a clearing-house for the financing and implementation of specific research undertakings. Such an entity would significantly reduce unwarranted duplication of research; permit greater standardization of research methodologies; and increase the effectiveness and efficiency of the planners who are in need of research information, and of those who finance and conduct research.

---

## References

- (1) United Nations World Food Conference. Rome, 1974. Assessment of the World Food Situation Present and Future. Item 8 of the Provisional Agenda. (E/CONF. 65/3)
- (2) Joint FAO/WHO Expert Committee on Nutrition. Eighth report. FAO Nutrition Meetings Report Series No. 49; WHO Technical Report Series No. 477, 1971
- (3) Proceedings of an International Conference on Nutrition, National Development and Planning held in Cambridge, Mass. Edited by Alan Berg, Nevin S. Scrimshaw, and David L. Call. Cambridge, Mass., MIT Press, 1973
- (4) FAO/DANIDA Seminar on Food and Nutrition Policy and Planning in English-speaking African Countries. Lusaka, Zambia, 1974. Report. (FAO/DEN/TF 129)
- (4a) Chenery, H.B., et al. Redistribution with Growth. Oxford University Press, 1974 (published for the World Bank and the Institute of Development Studies)
- (5) Joint FAO/WHO ad hoc Expert Committee on Energy and Protein Requirements. FAO Nutrition Meetings Report Series No. 52; WHO Technical Report Series No. 522, 1973
- (6) Joint FAO/WHO Expert Group on Calcium Requirements. FAO Nutrition Meetings Report Series No. 30; WHO Technical Report Series No. 230, 1962
- (7) Joint FAO/WHO Expert Group on Requirements of Vitamin A, Thiamine, Riboflavine and Niacin. FAO Nutrition Meetings Report Series No. 41; WHO Technical Report Series No. 362, 1967
- (8) Joint FAO/WHO Expert Group on Requirements of Ascorbic Acid, Vitamin D, Vitamin B12, Folate and Iron. FAO Nutrition Meetings Report Series No. 47; WHO Technical Report Series No. 452, 1970
- (9) Beaton, G. & Bengoa, J.M., editors. Nutrition in Preventive Medicine. WHO monograph series (In press)
- (10) National Supplementary Feeding Programmes for Nutritionally Vulnerable Groups. Working Paper prepared for the World Food Programme Intergovernmental Committee, 22nd Session, Rome, 1972
- (11) Meeting of Expert Group to Plan Evaluation of Supplementary Feeding Programmes. *PAG Bulletin*, 1973, 3 (3), 4-5 (1973)
- (12) WHO/UNICEF Joint Study on Alternative Approaches to Meeting Basic Health Needs of Populations in Developing Countries. World Health Organization, Geneva, 1975
- (13) World Health Organization. A Guideline for Nutrition Activities through Local Health Services for Joint WHO/UNICEF Strategy. World Health Organization, Geneva, 1974. (Unpublished document Nut/74.3)
- (14) Joy, J.L. Food and Nutrition Planning, *Journal of Agricultural Economics*, 24 (1), 196-197 (1973)
- (15) United Nations Industrial Development Organization. Guidelines for Project Evaluation. United Nations, 1972. Project Formulation and Evaluation Series No. 2

## Annex 1

### ILLUSTRATIVE OUTLINE "FUNCTIONAL CLASSIFICATION" OF AN UNDERNOURISHED POPULATION AS A BASIS FOR FOOD AND NUTRITION PLANNING <sup>a</sup>

1. *Regional divisions* – based on administrative structure
2. *Ecological sub-zones* including, e.g.,
  - urban
  - rural accessible – irrigated, non-irrigated
  - rural inaccessible – arable, grazing;
  - as well as subdivisions by cropping areas
3. *Economic status of subgroups of population* including, e.g.,
  - urban
    - migrants recently arrived
    - poor, stable employment: in large firms  
in small firms
    - poor, unstable employment or unemployed
    - income above subsistence
  - rural
    - settled farmers: "surplus" farmers  
"deficit" farmers
    - nomads
4. *Demographic categories within subgroups* including, e.g.,
  - mother – child (infants)
  - preschool children
  - school-aged children
  - adults – male  
female
  - elderly
5. *Deficiency pattern:*
  - chronic
  - seasonal
  - occasional
6. *Nutrient deficiency (or problem):*

protein-calorie	calcium
vitamin A	iron
riboflavin	iodine
vitamin C	(lathyrism)

<sup>a</sup> Joy, J.L. Food and Nutrition Planning, IDS Reprints 107, Institute of Development Studies at the University of Sussex, Brighton, Sussex, England. Reprinted from *Journal of Agricultural Economics*, Vol. XXIV No. 1, January 1973.

## THE EVALUATION AND SURVEILLANCE OF NUTRITION PROGRAMMES

A brief delineation of evaluation and surveillance measures to be adopted for ongoing nutrition programmes is attempted in this Annex.

There are similarities between the information needed for evaluation of specific nutrition programmes and for surveillance of the nutrition situation, and the more general data requirements for the formulation of food and nutrition strategies. The type of data required either for surveillance or evaluation will be more limited and designed to serve these specific purposes. Initial decisions about the types of baseline data to be collected should take into consideration the measures needed for subsequent evaluation and surveillance.

Massive and expensive surveys in which a wide variety of nutrition-related data are collected are not justified unless there is reasonable assurance that the government and agencies supporting the survey are committed to the expenditure of a very large sum of money for action programmes based on the survey findings. It is all too clear that many surveys have been completed and little action has followed. As a rough rule of thumb it is suggested that if one million dollars are spent on a survey, then at least 10 million dollars should be available for programmes aimed at overcoming the deficiencies identified by the survey. Another important guiding principle is that about 5 percent or less of total funds allocated to nutrition action programmes should be set aside for evaluation of the programme.

*Evaluation of nutrition programmes.* An essential requirement for the formulation of a food and nutrition strategy is to have the clearest possible understanding of the nature and extent of the problem to be solved. In the preparation of plans for specific programmes there are further requirements that must be fulfilled in order to be able to draw up programmes that can be effectively implemented and evaluated. Thus, a plan must be drawn up, with objectives clearly stated in measurable terms and with a statement of what changes are expected to occur as a result of activities of the programme, even if the expected benefits are in part only informed guesses. Finally, the programme itself needs to be systematically designed so that, as well as being aimed at the objectives and specific goals, the programme will generate data which can be used for measuring its effectiveness.

In summary, systematic planning should include:

(a) a diagnosis of the situation and a description of the problems to be tackled, including identification of the primary determinants of malnutrition;

- (b) a statement of the objectives, both short-term and long-term;
- (c) an examination of alternative means of reaching the objectives or solving the problem, including some estimate of the relative cost and effectiveness of each alternative;
- (d) an investigation of the suitability and probable acceptability of the proposed strategy in the area where the work is to be done;
- (e) collection of baseline data and detailed planning;
- (f) a built-in plan for continuous evaluation; and
- (g) preliminary plans for expansion of a modified programme to a wider area if the programme proves successful in the pilot areas.

Although these seven planning steps need to be undertaken early, it should be stressed that they should at all times be subordinated to the magnitude of the action programmes and must not be allowed to become ends in themselves.

Many programme plans state long-term objectives in very general terms, which need to be broken down into more specific objectives, and these in turn need to be subdivided into a set of short-term goals, each stated in measurable terms.

Wherever possible, evaluation should form an integral part of a nutrition programme and provide feed-back for modification or re-planning of future activities. For this purpose, it is important to build into the programme devices that will provide feed-back for modification of future activities by way of simple forms, assessment reports, and objective data. These devices should be so designed as to cost, in time and effort, no more than a fraction of the time and effort spent on the main programme.

The main purpose of evaluation should be to:

- (a) provide timely information which will indicate whether or not modifications are needed (and which ones) as programmes activities move through their various phases;
- (b) assist in the verification of the suitability and adequacy of methods and techniques being used and to help in the development of new ones;
- (c) disclose behavioural and related changes affecting the target group which should also indicate the degree of the programme's acceptability in the community;
- (d) provide a means of determining the extent to which the programme is achieving the objectives set for it;
- (e) provide specific information on the costs involved in carrying out the programme, on particular strengths and weaknesses of the programme, and on any unanticipated programme effects, whether favourable or unfavourable;
- (f) contribute to the job satisfaction of staff participating in the programme; and
- (g) assist in ensuring the involvement and the interest of individuals and groups which the programme is designed to help, and who may often

contribute to its success or failure.

A plan for evaluation needs to be prepared. This will be dependent on the baseline data to be collected and will rely heavily on various direct and indirect indicators.

*Nutritional surveillance.* Nutritional surveillance implies the continuous monitoring in a community or area of factors or conditions which indicate, relate to, or impinge on the nutritional status of individuals or groups of people. This activity often involves heavy costs and manpower requirements. Thus the system of surveillance should be as simple as is consistent with sufficient sensitivity to detect change. The fewer the resources of funds and personnel available, the greater the effort needed to ensure that surveillance is used to detect only important conditions and factors, ignoring those that are rare or uncommon. In many cases, either direct or indirect indicators may be used for assessing the nutritional situation or for detecting change. The system should allow comparisons to be made according to socioeconomic strata and by geographic region.

Nutrition surveillance should be initiated only when the means exist to respond to indicators. The conditions are propitious when (a) nutrition programmes or nutrition-related agricultural or health activities are under way, the effects of which should be assessed, or (b) the surveillance information is being used to identify persons at risk for intervention purposes or emergency relief measures.