Economic Growth, Equity and Nutritional Improvement in Indonesia

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Economic Growth, Equity and Nutritional Improvement in Indonesia

by

Soekirman, Ignatius Tarwotjo
Idrus Jus'at, Gunawan Sumodiningrat
and Fasli Jalal

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The ACC/SCN is the focal point for harmonizing the policies and activities in nutrition of the United Nations system. The Administrative Committee on Coordination (ACC), which is comprised of the heads of the UN Agencies, recommended the establishment of the Subcommittee on Nutrition in 1977, following the World Food Conference (with particular reference to Resolution V on food and nutrition). This was approved by the Economic and Social Council of the UN (ECOSOC). The role of the SCN is to serve as a coordinating mechanism, for exchange of information and technical guidance, and to act dynamically to help the UN respond to nutritional problems.

The UN members of the SCN are FAO, IAEA, World Bank, IFAD, ILO, UN, UNDP, UNEP, UNESCO, UNFPA, UNHCR, UNICEF, UNRISD, UNU, WFC, WFP and WHO. From the outset, representatives of bilateral donor agencies have participated actively in SCN activities. The SCN is assisted by the Advisory Group on Nutrition (AGN), with six to eight experienced individuals drawn from relevant disciplines and with wide geographical representation. The Secretariat is hosted by WHO in Geneva.

The SCN undertakes a range of activities to meet its mandate. Annual meetings have representation from the concerned UN agencies, from 10 to 20 donor agencies, the AGN, as well as invitees on specific topics; these meetings begin with symposia on topics of current importance for policy. The SCN brings certain such matters to the attention of the ACC. The SCN sponsors working groups on inter–sectoral and sector–specific topics. Ten–year programmes to address two major deficiencies, vitamin A and iodine, have been launched.

The SCN compiles and disseminates information on nutrition, reflecting the shared views of the agencies concerned. Regular reports on the world nutrition situation are issued, and flows of external resources to address nutrition problems are assessed. State–of–the–Art papers are produced to summarize current knowledge on selected topics. As decided by the Subcommittee, initiatives are taken to promote coordinated activities – inter–agency programmes, meetings, publications – aimed at reducing malnutrition, primarily in developing countries.

FOREWORD

Viewing improved nutrition as an outcome of development processes expands the area of concern for policy–makers and practitioners who seek to combat malnutrition. These processes operate at different levels in society, from the individual through to the whole arena of governmental policy and indeed international relationships. The SCN, in deciding on initiating a series of country–wide reviews of nutrition–relevant actions in 1990, aimed to provide a rich base of documented experience of why and how such actions were undertaken and what was their effect on nutrition.

This country–wide approach built on the progress made at the 1989 workshop on "Managing Successful Nutrition Programmes" held at the 14th IUNS Congress in Seoul. The focus here had been on nutrition programmes, and the essential factors determining their success, and the synthesis of findings and individual

case studies were later published as ACC/SCN Nutrition Policy Discussion Paper No. 8.

Two other influential documents were the SCN's "Nutrition–Relevant Actions" that emerged from the 1990 workshop on nutrition policy held in London, and UNICEF's 1991 Nutrition Strategy document. Together these provided both a common analytical framework for organising the reviews and a common language for discussing the various actions that impinge on nutrition. The value of such a framework has been demonstrated by the ease with which it lends itself to analyses of both the nutrition problem and its potential solutions. The food – health – care triad of underlying causes of malnutrition, in particular, proved to be a very useful framework for orienting the inputs and subsequent discussions at the 1992 International Conference on Nutrition, co–sponsored by FAO and WHO. Communication and thus advocacy are facilitated when people share such a conceptual understanding.

UNICEF had originally proposed that a series of country–wide reviews be undertaken and the results presented at the 15th IUNS Congress in September 1993. At the time of writing, preparations for this workshop are well underway –– in fact, the richness of documented material has necessitated the organisation of an additional two–day satellite meeting in Adelaide. We are extremely grateful to UNICEF for their financial support throughout this exercise. The series editor for these country reviews was Stuart Gillespie, and the SCN Advisory Group on Nutrition (AGN) also technically examined the drafts as these emerged. In addition, I would like to express gratitude to the external technical reviewers, selected for their in–depth knowledge of particular countries, who provided the authors with comments and suggestions on initial drafts.

The essential value of these country case studies lies in their ability to describe the dynamics involved when a national government attempts to combat malnutrition. Questions such as the role of the political economy in determining policy options, obstacles met in implementation, how programmes are modified or expanded, and how they are targeted, are all addressed. The need for actions to be sustainable to achieve results over the long–term, and the importance of both measurable objectives and a system of surveillance to monitor progress, are examples of important conclusions. These reviews thus provide valuable insights into the questions of "how" as well as "what", in terms of nutrition policy.

The country reviews are intended for a wide audience including those directly concerned with nutrition in developing countries, development economists, and planners and policy makers. Along with the output of the Adelaide meeting, they will be valuable for advocacy in underscoring that effective actions *will* improve nutrition. It is hoped that these reviews and the proceedings of Adelaide will provide guidance for a strengthening and expansion of future actions for reducing nutritional deprivation.

Dr A. Horwitz
Chairman, ACC/SCN

I. INTRODUCTION

In 1993–94 Indonesia will terminate the first long term (25 years) development phase which started in 1969, and will enter the second, beginning in 1994. The first 25 years have seen an improvement people's welfare to a level where most of the basic needs for the majority of people are met. Income per capita increased more than ten times in two decades, i.e. from US$ 50 per year in 1967 to US$570 in 1990, growing at an average of 4.5% annually. This, according to the World Bank, is faster than the income growth rate in Thailand and Malaysia in the same period. The increasing per capita income and economic growth were accompanied by a significant reduction in the prevalence of poverty and an improvement of some basic social indicators particularly in health, nutrition and education. (World Bank, 1990).

For a large and diverse country like Indonesia, development achievements in the two and half decades are only a beginning. Indonesia is still classified as poor country although it is projected that it could join the middle income countries by the end of the decade (World Bank, 1992).

There are still immense challenges in almost all aspects of development in Indonesia. About 27 million people (15%) still live in absolute poverty; the disparity between regions in the rate of progress in development is disturbing; the labour force is still growing at an alarming rate (2.3 million per year); and there is a strong need to improve living standards and the quality of education, health and nutrition. These challenges must be faced with accelerated sustainable development based on the achievements in the first long–term development phase.

Nutrition improvement has been explicitly recognized as one of the major goals of development in the past two decades. Various programmes and interventions were planned and implemented, some successfully.

This paper highlights the role of nutrition in Indonesian development in the past 20–25 years and its prospects for contributing to the next 25 years of development of Indonesia.

II. HISTORICAL BACKGROUND

Nutrition activities in Indonesia actually began in the eighteenth century, when the problem of beri–beri was rampant. In 1886, more than 30% of illnesses reported at hospitals was beri–beri. To investigate the cause of this disease a medical laboratory was established in Jakarta (then known as Batavia) in 1888 by the Dutch colonial government. In this laboratory the first Indonesian Institute of Nutrition Research was established in 1934, which later became the Eijkman Institute (1938).

The profound achievements at this institute were in laboratory research that lead to the discovery of vitamins, notably thiamin, and to the compositional analysis of indigenous foods. Community nutrition surveys confirmed the widespread nutrition problems – especially chronic starvation – particularly in cassava eaters in Central and East Java. In these areas daily per capita intake was only 1,100–1,300 calories and 22–36 grams protein. "Hunger Edema" as an overt sign of calorie and protein deficiencies in adults was seen as a common "disease" or endemic in these areas. In children, hospital studies in the 1950's indicated a high prevalence of severe PCM in kwashiorkor and marasmic forms. In addition, vitamin A, iron and iodine deficiencies were also already identified in the 1930's and 1940's. In this period no nutrition programmes were implemented, except for goitre. In 1927 a regulation on salt iodization was introduced to prevent goitre, particularly in Java.

After independence in 1945, the Dutch Institute of Nutrition Research (INR) was transferred to the Indonesian Government. The institute operated effectively only in 1950 because of the independent war against the Dutch in 1945–1950. Contrary to the Dutch INR, the new INR focused primarily on efforts to apply the existing knowledge of nutrition to solve nutrition problems. With the assumption that lack of nutrition knowledge was the major cause of nutrition problems, community education was regarded as the most important intervention in dealing with nutrition problems. Therefore the first priority of the new INR was establishing a school of nutrition and dietetics at high school and undergraduate levels in the 1950's. With the nutrition personnel from those schools, INR started nutrition education programmes for the community popularizing the nutrition principle of the "basic four" regarding the available indigenous food. In Indonesia this principle is well–known as *4 Sehat 5 Sempurna* ("4 Healthy, 5 Perfect") as the basic dietary guidelines.

All nutrition research – both laboratory and community – originally initiated by the Dutch INR was later extended with the support of FAO and WHO. In addition to training, nutrition education, and research, the new INR director was also assigned to give advice to the National Food Council on how to deal with nutrition problems. It is apparent, although only on paper, that even in the early 1950's and 1960's attempts were being made to incorporate nutrition in government food policy.

In the late 1960's community nutrition education involving village cadres was initiated in 8 provinces in Java and Sumatra as a part of a world–wide Applied Nutrition Programme (ANP) supported by FAO and UNICEF. Despite criticism of the simplistic approach of ANP in dealing with nutrition problems (e.g., its emphasis on protein deficiencies rather than calories), ANP in Indonesia was considered successful in creating awareness, particularly among government officials, of the importance of nutrition. This awareness later contributed to the development of ANP into a more Indonesian version called UPGK.

Applied and simple nutrition knowledge disseminated through ANP in the 1960's led to the recognition of nutrition as a science at university level. In 1965 two prominent universities, i.e., the University of Indonesia, Jakarta, and the University of Agriculture in Bogor established nutrition divisions in their School of Medicine and School of Agriculture, respectively. At present almost all medical schools, school of public health, and school of agriculture in Indonesia include nutrition in their courses. It could therefore be said that, unlike most other countries, the development of nutrition in Indonesia originated from its application in the community, and not in academia.

In the 1970's the effectiveness of ANP was evaluated. It was discovered that ANP had to be reconceptionalized and reorganized. There were no significant improvements either in food consumption or in the nutritional status of people in ANP areas. A food consumption survey in those areas conducted in 1974 indicated that 74% out of 1,053 sample households were calorie deficient, and 51% were deficient in both

calories and protein. Nor were any signs of significant reductions in the prevalence of malnutrition in adults and children reported.

One serious weakness of ANP in general (including Indonesia) was the lack of complementarity with other related programmes, such as primary health care (immunization, mother–child care, water supply and sanitation), family planning, and agricultural programmes that could generate income and improve food consumption. Another problem was that in its development in the 1960's, in Indonesia, ANP was not yet supported by a favourable socio–economic environment that was conducive to the application of nutrition in family daily life.

In the era of national development starting in 1969 (the first Five Year Development Plan) Indonesia witnessed a comprehensive social and economic development that gradually improved the standard of living. Socio–economic infrastructures in agriculture, industry, education, health, etc. developed so that more food, jobs, and social services became available. In the last 10–15 years the development of nutrition in Indonesia has enjoyed a favourable social and economic environment in terms of policy commitments so that nutrition programmes can be developed in a sustainable fashion. In addition, the stronger role of nutrition in economic and social development strategy was increasingly recognized by the international development agencies, primarily by the World Bank in the 1980's. This is also believed to have contributed to a higher commitment to nutrition in the Indonesian development.

In the 1980's the ANP or old UPGK activities were revised to become the "new UPGK" or the Indonesian version of ANP where UPGK is a community movement implemented throughout the country. With this the number of villages implementing UPGK increased from only 1600 villages in 8 provinces in 1973 to almost every village (more than 65,000) in all 27 provinces in 1989. UPGK activities work alongside agriculture and health as well as family planning, rural development, non–formal education, and non–government organizations, (particularly the Village Women Organization [PKK]), and religious organizations.

There are three major activities in the new UPGK movement:

i) Community nutrition education,

ii) Nutrition service for mothers and under–five children through *Posyandu* (to be described further);

iii) Development of home and community gardens to generate income and food consumption of small farmers.

The above activities do not operate in a vacuum as the ANP did in the 1960's. The UPGK and other nutrition programmes on micronutrients operate in rural settings so that local employment and food production can increase, basic education and primary health care can be provided, and small rural industries can develop.

To support the growth of the UPGK movement and nutrition intervention in micronutrient deficiencies, in the 1980s many more nutrition institutions were constructed. The number of training institutions for nutrition was increased in order to meet the growing demand for nutrition workers to run community programmes. Fellowships abroad for graduate degrees in nutrition were also tripled to meet the demand of research and training institutions.

Meanwhile, at the community level, thousands of villagers (mostly women) from all over the country were trained as UPGK cadres in nutrition education and to operate the "weighing posts" established by the Family Welfare Women's Movement (PKK). In these posts village mothers get together to weigh their children and obtain nutrition advice from the UPGK cadres. In the 1980s "the weighing post" activities were integrated with other primary health services and family planning, the whole programme becoming known as *Posyandu*.

The 1980s as regards nutrition in Indonesia may be called the *Posyandu* decade, as it was then that integrated services of nutrition, immunization, mother–child care and family planning was most effective. Before the *Posyandu* era, those services were provided by various sectors at different times and locations for the same target group. As expected, such unintegrated services were inefficient and ineffective due to overlapping activities, negative competition and sector "rivalry" which confused people.

Since its establishment, *Posyandu* has functioned as the spearhead for all the nutrition and primary health care services provided by health centres and sub–centres now present in every sub–district and village. Thus, *Posyandu* functions as an informal–referral system of community participation to rural health centres and

sub−centres. *Posyandu* makes the "unreachable" children and mothers "reachable".

In 1990 there were about 250,000 *Posyandus* all over the country, averaging out at approximately 2−3 *Posyandus* per village. Technically (in immunization, family planning, and mothers' care), *Posyandu* is assisted by health and nutrition professionals from sub−district health centres now available across the country. With *Posyandu*, the nutrition services of UPGK for children and mothers has had a significant effect on the improvement of child nutrition status (Megawangi, 1990).

To conclude, nutrition policy, programmes and activities in Indonesia have developed stage by stage. The first stage was the establishment of the Institute of Nutrition Research (INR) in Jakarta by the Dutch colonial government in 1934. INR focused its activities on research to discover the nature of the nutritional problems prevalent among Indonesian people. The institute also led to nutrition research development under the Indonesian government. This second stage, started after independence in 1945, resulted in INR building more nutrition centres. The third stage in the 1970's continued this policy and also established UPGK community programmes, i.e. the Indonesian version of the FAO/UNICEF Applied Nutrition Programme (ANP) in 8 provinces. This was also the stage of formal recognition of the role of nutrition as one of the "sufficient" conditions in national socio−economic development. The fourth stage when nutrition programmes enjoyed the sustained growth of the Indonesian economy came in the 1980s. Even during the adjustment period of the mid−eighties, the policy commitment to nutrition did not diminish. This was a time of UPGK movement throughout the country with active community participation. Since the 1980s, for the first time Indonesia has had national data on child anthropometry and on vitamin A deficiency, showing the beginning of success for the nutrition programmes. This is an important stage if only to demonstrate that nutrition does contribute to human resource development.

III. ECONOMIC TRENDS

Indonesia started its Five Year Development Plan (FYDP I) in 1969 when Indonesia was one of the poorest countries in the world. Indonesia's per capita income was only US$50, about half that of India, Bangladesh and Nigeria. Within two decades since 1969, Indonesia has sustained GDP growth at almost 7% per year, a rate far above the average for some developing countries, and close to that of East Asia, the most dynamic region in economic development.

Due to the oil boom in 1973 Indonesia enjoyed the highest GDP growth of 11.3%, but then suffered a series of oil shocks and world economic crises from 1982−1987 when the average GDP growth dropped to less than 5%. In response to the external shocks, the Indonesian government implemented a broad range of adjustment policies and structural reforms starting in 1983. The result restored financial stability and economic growth by restructuring the economy to boost non−oil exports. Since 1988 the GDP has increased from 5.8 to 7.5% p.a. (Table 3.01).

The adjustment period in the 1980's involved short−term social cost that primarily affected the poor. The Government took action to mitigate the social costs of adjustment by re−allocating development expenditure to important social and economic programmes, such as agriculture and human resource development including health and nutrition. Despite the cuts in the overall development budget due to the 1985−89 oil crises, the development budget for the infrastructure and human resource development did not decline.

In order to be comparable to international data and to minimize the authors' national bias, most economic information presented here is purposely cited from World Bank publications using data taken from the Indonesia Central Bureau of Statistics (CBS).

In two decades of development in Indonesia, the agriculture sector has been, until recently, the prime mover of economic growth. Table 3.03 shows that agricultural GDP grew at an average annual rate of 3.8% above the population growth 2.1%. This sector in 1969 contributed the biggest single share of GDP (36.8%). With rapid growth and economic transformation the agricultural share in GDP declined to 19.4% in 1990, while the manufacturing and industry share in GDP increased from 28.8% in 1969 to 34.4% in 1989 (Table 3.03).

During the last decade Indonesia also witnessed an impressive decline in population growth from 2.42% in 1971−1980 to 1.98 in 1981−1990, due primarily to the success of family planning programmes (CBS, 1990). With both sustained economic growth and a decline in population growth, Indonesia has raised living standards in terms of per capita GNP as well as social welfare. The GNP per capita grew by 4.5% per year in the 1980's and in 1990 per capita income reached US$570. It is still much lower than the per capita income of

Thailand and Malaysia. Therefore in the World Bank reports, Indonesia is in the 'poor country' category. It should be noted that development in Indonesia started from a much lower base.

In addition to economic growth, Indonesia's development also aims for equity and better income distribution. One way of measuring equity to use the ratio between the income share of the richest 20% and poorest 20% of the population. Table 3.04 shows narrowing of inequality in Indonesia in 1990 (4.71) as compared to 1981 (5.10). The breakdown by province also shows a similar pattern to the national figure. Except for Irian Jaya (suspected data problem), Table 3.04 demonstrates better income distribution across the country. Compared to some countries in Asia and Latin America, such as Thailand, India, Philippines, Malaysia, Mexico, Costa Rica and Brazil, the equity performance in Indonesia is relatively better (Figure 3.01).

Another way of measuring inequality is by measuring poverty. In the World Development Report 1991 on poverty, Indonesia is cited as an example of a country where the growth process has had a major impact on reducing poverty. Using the poverty line adopted by CBS, the incidence of poverty in 1976 was 40.1% (54.2 million), which declined significantly to 15.1% (27.2 million) in 1990. It means that in less than one generation more than 27 million people (50% of the total poor) were lifted out of poverty. The incidence of rural poverty declined from over 40% in 1976 to about 14%. Meanwhile, urban poverty declined from just under 40% to about 17%. It seems that there was also a relative shift in the geographical position of the poor. In 1976, 18% of the country's 54 million poor were located in urban areas, and 82% in rural areas. By 1990 this had changed to 35% in urban areas and 65% in the rural (Table 3.05). The relatively fast reduction in poverty in rural areas was partly due to increased income from rice production, and partly also due to rural–urban migration.

There is considerable variation among regions in the decline of poverty. This variation reflects the different pace in regional economic growth due to the different resource bases at the beginning of development in the early 1970's. The largest decline occurred in rural Java, and also on a smaller rate in rural Eastern Indonesia. Figure 3.02 shows that the highest incidence of poverty was in Eastern Indonesia, although in absolute numbers, Java and Bali were still the biggest (62 % out of 27 million total poor people in 1990). Therefore, the strategy for poverty alleviation will be mostly focused in Java and Eastern Indonesia (West and East Nusa Tenggara, Maluku, Irian Jaya and East Timor).

The World Bank analysis on the factors underlying the reduction in poverty in Indonesia mentioned several conditions. One important condition, according to the Bank, was that the Indonesian Government had established a strong rural–based development in the 1970's. An intensive network of social and economic physical infrastructure was built in almost all rural areas, especially Java. The economic infrastructures first established were agriculture and communication which provided food, employment and income. At the same time social infrastructures and services for basic education, health, nutrition, water supply and other rural development activities with active community participation were established. Another condition was that during the adjustment period, the Government cut public investment, preserved public consumption, promoted private and community participation, and protected poverty alleviation expenditures in agriculture and human resource development.

Does the sustained economic growth, equity, and reduction of poverty achieved in the last two decades of development in Indonesia, also reflect people's health and nutritional improvements? The following paragraphs attempt to present the current status of food policy, food security, and development in the prevalence of the four major nutrition problems in Indonesia: PEM, vitamin A deficiency, IDD and iron deficiency.

IV. NUTRITION TRENDS

Food and Nutrition Policy

Indonesia's commitment to improve the nutrition situation has been explicitly stated ever since the Second Five Year Development Plan (FYDP). In the Fifth FYDP (1988 – 1994) the food and nutrition policies focus on four objectives: (i) sustaining food self–sufficiency through increased food production; (ii) improving nutritional status for the population through increased diversification of food consumption; (iii) improving the nutritional status of infants, children and pregnant women; and (iv) improving the nutritional status of the population by reducing the prevalence of nutritional diseases such as protein and energy deficiencies, vitamin A deficiency,

nutritional anaemia and goitre. National efforts to implement this policy involve inter−sectoral co−operation, particularly between health and agriculture. In particular, the fifth FYDP nutrition policy is indirectly related to poverty alleviation.

These policies are elaborated in sectoral and sub−sectoral annual programmes. In the agricultural sector, nutrition goals are included in the macro and micro programmes of the agricultural sector's food section. Macro programmes are national programmes to ensure food security by intensification, extensification, and diversification of food productions with the following objectives:

i) to sustain rice self−sufficiency;
ii) to increase farmers' incomes;
iii) to provide sufficient and diversified food supplies to meet nutritional requirements.

These objectives are supported by a food marketing system that ensures stable food prices both affordable for consumers and profitable for farmers. The food marketing system, especially for rice, is managed by the National Food Logistic Agency (BULOG). For more than two decades BULOG has successfully balanced market systems in order to stabilize rice prices all over the country.

The micro programme in the agricultural sector is designed specifically to accelerate the poverty alleviation of small farmers in certain areas. The programme is part of a national community nutrition programme called UPGK with emphasis on generating income from the family garden, as well as direct consumption purposes especially related to micro nutrients deficiencies. This programme is a manifestation of the agricultural role in nutrition at a micro level where joint activities between agricultural and nutrition workers at sub−district and village levels are carried out.

The following paragraphs on food consumption and food security illustrate the outputs of macro food and nutrition policies. The paragraphs on nutritional status trends are more related to micro programmes implemented within social sectors: primary health, agriculture, and family planning. The micro programmes in nutrition consist of: (1) UPGK programmes; (2) micronutrient deficiency eradication; (3) institutional nutrition; and (4) nutritional surveillance.

Food Consumption and Food Security

One of the crucial problems faced by Indonesia at the early stage of development was food insecurity due to insufficient food production and distribution problems. In the 1960's (before the development era) food production did not keep up with the population growth. Per capita food production even declined. Therefore, for food security reasons, dependency on food imports was inevitable. Rice imports represented an annual drain of about 25% of foreign exchange in the 1960's. Until the late 1970's, Indonesia was known as the biggest rice−importing country in the world (Ismael, 1970). Therefore in the past two and half decades, rice self−sufficiency has been one of the primary goals in the economic development. With the introduction of high−yielding rice varieties developed at IRRI at the onset of the green revolution, coupled with the development of irrigation, technology, and the supply of accessible rural credits, the government's commitment to rice self−sufficiency was achieved in 1984. Rice imports declined from about 1.2 million tons in 1974 to almost nothing in 1988. (Bappenas, 1990). It is apparent that the food sub−sector has been responsible for growth in the development of the rural economy. In 1968−1990 rice (paddy) production per capita increased by 64.7%, an averaging out of 3.2% annually. (Figure 4.01).

Indonesian food consumption patterns are similar to other ASEAN countries. With an increased income, the share of cereals in the diet are declining, although the quantity of cereals, especially for "preferred" foods such as rice and wheat, may increase. The consumption of "inferior" staples such as cassava and other tubers is also declining at a faster rate. The rate of growth for rice consumption in the 1970's was 2.1% per year declining to 1.9% in the 1980's, while wheat declined from 6.8% to 5.3%, and cassava and sweet potatoes also declined. It should be noted that the consumption of maize also significantly increased due to use as animal feed (Table 4.01).

It is interesting to note that in 1988 the average calorie intake per capita per day reached 2,675 kcals, above the average requirement of 2,100 kcals. Compared to other Asian countries, a level of 2,675 kcals per capita per day for Indonesia, according to the World Bank, is relatively high for the level of current income (US $ 560). The per capita calorie consumption average in Korea and Singapore now is 2,865 kcals (World Bank, 1992b). In the World Development Report of 1992, Indonesia is still placed amongst the low−income

developing countries. Yet, Indonesia, as shown in Figure 4.01. has the highest daily calorie supply of all low–income countries and a higher daily calorie supply than many middle income countries. (World Bank, 1992c).

A unique phenomenon of the Indonesia diet is the role of cereals in the total calorie intake. On average, the share of cereals in total calories in ASEAN countries, e.g., South Korea and Japan peaks at about 68% or 1,500 kcals per capita per day at US$ 350 (1985 US dollar). Above this income level, total calorie consumption continues to increase, but the share of cereals decreases. In 1986 – 1988, Indonesia's per capita GDP was about US$ 560. Yet, the calories available from cereals are in excess of 1,500 kcals and the share of cereals in the total of calories consumed has continued to expand (Figure 4.02). This peculiar phenomenon is partly due to data problems. However some other factors such as urbanization, the amount of rice and other foods entering commercial markets, income distribution and the price of rice are also possible variables responsible for the relatively high calorie intake in Indonesia.(World Bank 1992b). Due to the unique position of rice in the Indonesian diet, this self–sufficient rice policy is likely to be sustained in the future.

The shifting trends of cereals and other food consumption in Indonesia is presented in Table 4.02. The share of cereals in the total calorie consumption, as described above, continues to increase as does the consumption of preferred foods such as meat, fish, fruit and vegetables but the latter only accounts for a small proportion of the total calories consumed. Compared to other rich Asian countries, the consumption of meat, fish, fruit and vegetables are relatively low in Indonesia. Although the share of total calories from root crops declined by half over the last two decades, it is still well above other countries. The share of oilseeds which include peanuts and soybeans as traditional sources of plant protein and fat is also relatively high. In Indonesia, some oilseed products such as "tempe", "tofu" and many others are preferred foods, and per capita consumption tends to increase with an improved income.(Figure 4.03)

Nutrition Status

Trends in nutritional status in Indonesia are usually described using data collected from scattered surveys and special studies in various parts of the country. Nationwide trends in the general nutrition status were based on the data gathered from anthropometric surveys initiated by a collaboration between the National Census Bureau and Nutrition Directorate in 1986–89, and the earlier country–wide Nutritional Blindness Surveys (known as the National Xerophthalmia Survey) in 1977–78.

Table 4.03 describes the magnitude and trends in the nutritional status of under–fives over a period of three years. The table shows that nationwide nutrition has improved. The proportion of children with good nutrition (80% and above NCHS median W/A) increased in 1989. The proportions of those who are mildly (70–80% median W/A), moderately (60–70% median W/A), and severely underweight (below 60% median W/A) are decreasing.

As seen in the same table, for Indonesia as whole, in 1986 nearly half of the children are of good nutrition status; more than 37% are slightly underweight, 12% are moderately, and only 1.8% are severely underweight. The overall picture of nutritional status in 1989 has improved. The upward trends, from 1986 to 1989, in good nutritional status is seen in almost every province of Indonesia. Obvious decreases in the underweight rates can be seen in Sumatera, Central Java, and Sulawesi provinces. The two provinces which show the best improvement in nutritional status are Yogyakarta and Bali.

Moderate underweight

The trends and magnitudes of moderately underweight children are presented by place of residence and by gender in Tables 4.04 and 4.05., respectively. In Indonesia as a whole, the percentage of moderately underweight boys in the urban areas is lower than those in the rural, both in 1986 and 1989. However, the general picture was better in 1989 than in 1986. The decrease in the rates of moderately underweight boys from 1986 to 1989 are seen in South Sumatera and Lampung, West, Central and East Java, in West, Central and East Kalimantan, and in Central and South East Sulawesi.

In rural communities, a similar decrease in the moderately underweight is seen in the provinces of West Sumatera, Jambi, South Sumatera, Bengkulu, Lampung, West Nusa Tenggara, West, Central and East Kalimantan, in North and Central Sulawesi. As shown in Table 4.05., the proportion of moderately underweight girls, both in urban and rural Indonesia, did not change very much from 1986 to 1989. In provinces such as Aceh, Riau, Jambi, South Sumatera, East Nusa Tenggara, Central Kalimantan and North

Sulawesi, the percentage of the moderately underweight in urban communities increased significantly from 1986 to 1989. In rural communities, similar increases were seen in the provinces of Lampung, North and West Sumatera. In some provinces, however, downward trends in the moderately underweight are observed from 1986 to 1989.

Severe underweight

The trends and the magnitude of severely underweight children are presented both by place of residence and by gender in Tables 4.06. and 4.07., respectively. For Indonesia as a whole, significant improvement was seen amongst boys, both in rural and urban communities from 1986 to 1989. The decrease in the rates of the severely underweight are more evident amongst boys than girls. A considerable decrease from 1986 to 1989 in the percentage of severely underweight boys is observed in most of urban and rural Sumatera, except North Sumatera and Lampung. With the exception of Yogyakarta, similar decreases were also observed in Java, rural West Nusa Tenggara, East Nusa Tenggara, and East Timor.

The change in the percentage of severely underweight girls from 1986 to 1989 was relatively small. In Indonesia as a whole, almost no change was observed in urban communities. It was only in the rural communities that any decrease was discernable, notably in West Sumatera, Riau, Bengkulu, Lampung, Central Java, West Nusa Tenggara, East Nusa Tenggara, East Timor, Central and East Kalimantan, North and Central Sulawesi. The tables presented so far describe the trends in nutritional status from 1986 to 1989. The following tables will describe the trends over a longer period.

Trends

To see the trend over a longer period of time, the anthropometric data taken from the National Social Economic Surveys in 1989 are compared with those from the National Xerophthalmia Survey in 1978. The earlier survey was done in 23 provinces instead of 27. Due to logistical problems, Irian Jaya and East Nusa Tenggara were not included in the Xerophthalmia Survey, only the island of Ambon was included for Maluku, only the island of Lombok for West Nusa Tenggara, and East Timor did not exist. The comparison is then made by zone of islands rather than by province.

The comparison is based on NCHS median W/A by category of percentage from the median, and also by Z score, as presented in Tables 4.08. and 4.09., respectively. Table 4.09 shows the percentage of children severely underweight in 1978 was less than in 1989 in both sexes. Similar percentages of boys with good nutritional status are seen in 1978 and 1989, although amongst girls, differences are observed.

When the category of 100% and above median NCHS is separated from the group of 80–100%, some zonal differences are seen. Among boys upward trends are observed in Sulawesi and Kalimantan from 1987 to 1989. Among girls upward trends are seen in Java and Sulawesi, but downward trends are observed in Sumatera and Kalimantan. Similar results are also seen in Table 4.08., with the exception of Sulawesi among boys. Based on the results of several surveys conducted since 1973, the prevalence of moderate and severe nutrition in this country has been decreased approximately 37% in two decades. It is predicted, as shown in Figure 4.04 that this figure will decline to about 7% by the year 2000.

Socio–economic differentials

When nutritional status is examined against economic class, the results are described in Table 4.10. This is categorized on the basis of the Harvard median W/A standard. The economic class is categorized on the basis of monthly household expenditure divided into 11 sections. Table 4.10a indicates that the percentage of moderately and severely underweight children in households with monthly expenditure below 100.000 rupiahs is much higher than those with an average monthly expenditure of above 150.000 rupiahs.

Using data from the National Socio Economic Survey in 1987, and breaking down the prevalence of underweight children into quartiles of expenditure (presented as an adult equivalent unit, a unit of energy requirement). Table 4.10 clearly indicates that the lower the expenditure, the worse the nutritional status. After controlling the expenditure level, the children in rural areas are more malnourished than urban children. Determinant analysis of nutritional status using the National Socio Economic Survey 1987 data identified the following independent risk factors of W/A: male sex, rural residence, high number of siblings, low level of income, low calorie consumption, and poor maternal education (Jus'at, 1991; Megawangi, 1991).

Growth faltering

It is interesting to see when the growth of these children actually began faltering. An analysis of anthropometric data from the National Socio Economic Survey 1987 as described in Figure 4.05., indicates that at one month of age the mean z−score drops sharply, and levels off at about minus two standard deviations at 11−13 months.

A similar result is obtained when the mean z−score of W/A, from a longitudinal study in Madura, East Java (EJPS 1991) is plotted. The question to be addressed is at what age does the faltering of Indonesian children start and end? Using two sets of the National Socio Economic Survey data of 1987 and 1989 (as presented in Figure 4.06), it is obvious that Indonesian infants start faltering in growth much earlier than expected. The findings of this analysis are in accordance with the findings of longitudinal studies in urban Semarang, Central Java (Soekirman, 1983) and rural Madura, East Java (Launer, 1987). It was also found that at 12 months of age the mean z−score of W/A of the population no longer decreases but remains relatively constant, yet with no indication of catch−up in growth.

Low Birth Weight

A large body of evidence indicates that gestational weight gain, particularly during the second and third trimesters, is an important determinant of foetal growth. Low gestational weight gain is associated with an increased risk of giving birth to a growth−retarded infant (Kardjati, 1985). Foetal and infant mortality rates have been used to track progress in improving infant health, and to reflect the overall health status of the population. Infant size at birth is a key determinant of child health, especially in early childhood.

In an attempt to identify infants at highest risk, infants with low birth weights (<2,500g) have been compared with infants who weigh more. Studies have shown that compared with infants who weigh over 2,500g, the LBW babies are nearly 40 times as likely to die during the neo−natal period, and are five times as likely to die during the post−natal period.

Two prospective studies in West and East Java as presented in Table 4.11. showed a remarkably discrepancy in the distribution of birth weight between those two provinces. Maternal health and nutritional status related to environmental stress might be the main cause. A representative national figure on the incidence of LBW is non existent. Based on figures from scattered studies as shown in Table 4.12., it might be concluded that the incidence of LBW in Indonesia is relatively high, about 10−12%. It is difficult to conclude that there is any geographical variation in the incidence of LBW in Indonesia.

However, this is due to the differences in the methodology. Most of the field studies were conducted in Java, while in Sumatera the figures were mostly collected from hospitals and maternity clinics.

Infant Mortality Rate and Life Expectancy

One of the important basic health status indicators is the Infant Mortality Rate, which is the number of infants per thousand live births, who die within a year. Indonesia's record of mortality reduction over the last two decades has been solid and impressive. A key indicator is infant mortality, which accounts for around 30% of total deaths. Periodic census survey data show that the infant mortality rate has been roughly halved from around 129 per 1,000 live births in the mid−1960s to a level of about 97 in the 1980s and 63 in 1990 (see Figure 4.00). This reflects a faster mortality decline, which increased from an annual average of 1.2% between the 1971 and 1980 censuses, to 9.1% between the 1980 and 1990 censuses. However, Indonesia's performance still lags behind the levels achieved in neighbouring countries. Infant mortality averages at only around 45 in the East and Southeast Asia region as a whole. Corresponding rates in the individual ASEAN countries are also much lower than in Indonesia: 45 in the Philippines, 39 in Thailand, 24 in Malaysia, and 9 in Singapore (Interim estimate of IMR in 1990 is about 70.0 for combined sexes).

In the 1990 Population Census data, fourteen provinces indicated IMR below the national average, and thirteen provinces at or above the national average; Yogyakarta being the lowest (39) and West Nusa Tenggara the highest in Indonesia (123). Although data on male and female IMR for 1990 are not available yet, it is believed that the pattern is similar to that of previous censuses, i.e. in all provinces the IMRs of females are lower than males (Table 4.13).

Life expectancy (LE) at birth is also used as a basic health indicator. Life expectancy increased from about 52.5 years in 1980 to 59 years in 1990. This steep increase should be cautiously interpreted, for similar reasons as those for IMR. Twelve provinces indicated LE below the national average, fifteen provinces LE above the national figure; Yogyakarta being the highest (64.7 for male and 68.5 for female) and West Nusa Tenggara the lowest (44.6 for male and 47.3 for female). In all provinces the LEs of females are higher than those of males (see Table 4.14).

Infant Feeding Practices

The National Socio–Economic Survey data 1987 (Figure 4.07), shows that the median length of breast feeding is about 17.2 months, that 90% of the children are breast–fed for at least 9.2 months, and approximately 10% are still on breast–feeding at 23.8 months (Jus'at, 1991). Children in rural areas are more likely to be breast–fed than those in urban areas. Approximately 90% of rural children were breast–fed at least for 10.6 months, the median length being about 17.4 months, which is significantly longer than urban children. An analysis can also be made on breast–feeding and maternal education. Figure 4.09 shows that, in this population, the median length of breast–feeding of children whose mothers have a high education level was about 15 months, which is three months shorter than those with the lowest education level. The difference in die length of breast–feeding amongst the four maternal education levels 'is significant.

Income level appears to have a significant influence on a mother's decision to wean her baby. Figure 4.10. shows that the difference in the length of breast–feeding amongst the four groups ranked by quartile of expenditures is significant. The median length of breast–feeding in the lowest quartile of expenditure was approximately 18 months, about one month longer than those in the highest quartile. About 90% of children in the lowest quartile were breast–fed for at least 11 months, while it was only 7 months for those in the highest quartile.

Although more than half of the children included in the National Socio Economic Survey 1987 are given some food in addition to breast milk in their early infancy, as they become older a divergence in feeding patterns becomes apparent. Figure 4.11. shows that some children continued to receive complementary food, while approximately 0.45% of children at 12 months or older were reported to have received nothing but breast–milk. A mother's decision on whether or not to give her infant complementary food is based on her previous experience in feeding and advice from trusted relatives. Similar findings were also reported from the weaning practice assessment in East Java and West Nusa Tenggara by the nutrition directorate of the Ministry of Health and Manoff International in 1986. The following two charts (Chart 4.01 and Chart 4.02) illustrate the basic child feeding practices in Indonesia.

Maternal Mortality

Improvement of maternal and foetal health and nutrition has been a public health goal in Indonesia for several FYDPs. One of the indicators used to evaluate the maternal health status of a population is the Maternal Mortality Ratio. Although the size of the problem is not precisely known, it is thought to be sufficiently large to be a cause of grave concern to policy makers. During the last two decades many studies have been conducted to measure the extent of maternal death. Special studies at the local level provide a great deal of important information. MMRs at national and local level are shown in Table 4.15 and variations can be observed. As distressing as the rates shown in this table are, some of them are probably underestimates. Most studies on this issue have been conducted in Java, and there is a considerable divergence in reported MMRs. While some of this may be due to differences in study design, in general the patterns are those that one might expect.

Maternal Nutrient and Energy Intake

Efforts to improve maternal and foetal nutrition during pregnancy have focused on achieving appropriate energy intake and ensuring an adequate supply of specific macro and micro nutrients. In Indonesia, however, there is limited information available on maternal energy and nutrient intake during pregnancy and lactation. A study conducted in three different places in Java based on different staple foods as presented in Table 4.16 shows that there was no difference between maternal energy and protein in the period of pre–pregnancy and

pregnancy, 1500 kcals and 40 g protein respectively. (Martoatmodjo et al, 1973). The diversity in dietary pattern between regions is governed by agricultural possibilities, the availability of special food items, and by the market facilities. Two recent longitudinal studies by different workers in different locations produced similar results (Husaini et al. 1985; Kardjati et al. 1990).

Maternal Anthropometry

Maternal weight, height, and weight–for–height ratio are used frequently as indirect measures of nutritional status. The ability to establish a trend in body size requires serial data from representative subjects from the same population. Pregnancy weight and height have been used extensively to predict gestational weight gain. Knowledge of stature (standing height) is indispensable when careful classification by pregnancy weight is desired. Such classifications are based on body mass index (BMI).

Indonesian women in rural areas are relatively small with an average height of about 150 cm, and lean with average pre–pregnancy weight approximately 42 kg. Their BMI is approximately 17.4 which is much lower than the acceptable level of 18.5. The use of arm circumference as an indicator of maternal nutrition status is attracting more attention. This is due to its ability to predict various pregnancy outcomes and its practical advantages compared to other anthropometry. Husaini et al (1986) found that median arm circumference of women in Bogor, West Java during the course of pregnancy is almost constant, about 23.7. This figure is less than that of preliminary findings in Indramayu, where it is about 24.3 (Achadi, 1992). From her study in East Java, Kardjati et al (1978) reported an average arm circumference of pregnant women of about 22.9 cm.

Micronutrient Deficiency Disorders

Vitamin A deficiency

Early in the 1960s it was reported that lack of vitamin A was the largest single cause of blindness in Java, and it was estimated that blindness in 20–23% of preschool children was caused by keratomalacia. There were many cases of night–blindness among children attending Qur'an reading schools in Bogor, that upon clinical and laboratory examinations were positive (Oey, 1962; Ten Doesschate, 1968; Roels, 1961). A field trial in Bogor and a more extensive study in Central Java, where xerophthalmia cases were found in 5–7% of children, showed that crude red palm oil was effective in preventing vitamin A deficiency (Roels, 1961; Gyorgy, 1963).

To study the magnitude and distribution of vitamin A deficiency and its aetiology in Indonesia, a comprehensive survey was conducted, which consisted of:

– a prospective longitudinal epidemiologic assessment in West Java on the natural aetiology of mild conjunctival xerophthalmia;

– an in–depth clinical study in West Java on cases of corneal xerophthalmia; and

– a country–wide cross–sectional survey on nutritional status and xerophthalmia.

Among the principal findings of the study were:

i) Xerophthalmia is a serious problem in Indonesia. Over 60,000 children develop gross corneal involvement, resulting in a third left permanently blind or visually impaired. The disease seems to be prevalent in 15 provinces. Mortality, especially among untreated cases is high, although a large proportion of these deaths were related to systemic illness and generalized malnutrition.

ii) Although many factors may contribute to vitamin A deficiency, inadequate consumption of foods rich in vitamin A, beta carotene, and edible fat is a major one. The majority of xerophthalmic children consume three potentially fortifiable items: MSG, refined sugar, and wheat.

iii) Corneal xerophthalmia was frequently accompanied by energy–protein malnutrition, apparently precipitated by measles, and may occur in the absence of obvious conjunctival changes.

iv) Among preschoolers, Bitot's spots are a specific sign of active vitamin A deficiency. Correlations between the prevalence of Bitot's spots, active Compaq xerophthalmia, and corneal scars suggest that the WHO criterion for a significant public health problem (prevalence of Bitot's spots at 2%) is far too high for Indonesia.

v) Oral administration of 200,000 IU of oil–miscible Vitamin A upon diagnosis, the following day, and again after two weeks provides adequate systemic vitamin A therapy for active xerophthalmia.

A number of these recommendations have been applied in intervention programmes in Indonesia, for example: extensive vitamin A capsule distribution, social marketing on the consumption of green leafy vegetables and field trials on vitamin A fortified food commodities. Re–assessment on the prevalence of xerophthalmia in seven provinces was made during 1986–1989. There were indications that xerophthalmia had become scarce. Another xerophthalmia re–survey is currently being conducted in 15 provinces where vitamin A deficiency is prevalent. Interim reports indicate that the WHO's criterion for a public health problem are exceeded in only two of the 15 provinces (see Tables 4.17., 4.18, and 4.19).

Iodine deficiency

Endemic goitre and cretinism together remain one of the serious public health problems. Its gravity from a public health view point stems not only from the physical problems caused by goitre itself, but from the accompanying functional anomalies, particularly the high incidence of cretinism found in several endemic areas. In recent years the focus of interest has shifted from the description of goitre and the detection of endemic cretinism, to the effect of severe deficiency with regard to mental and physical development.

In the past goitre was found in almost every major Indonesian island, with a prevalence rate as high as 92% in certain endemic areas. Females suffer more from goitre than males. The presence of endemic cretinism indicates the severity of the problem. A survey in 1971 by Djumadias et al covering 6,703 school children in various sites in Indonesia found goitre rates varying from 62 to 89%. Another survey in Central Java (surrounding Mt. Merapi) covering 11,774 children found goitre rates varying from 25 to 95%. From a nation–wide goitre survey of primary school children in 1980–1982, a goitre map of 966 sub–districts can be established. The data revealed that 68% of sub–districts were severely endemic. In some sub–districts the prevalence was as high as 80–90%. Endemic cretinism was found in 10% of the villages. It was estimated about 30 million people are living in endemic areas. Among these 750,000 suffer from cretinism, 3 million from endemic goitre, and 3.3 million from other forms of iodine deficiency disorder.

To attain the goal that by the year 2000 no cretinist baby will be born, an IDD National Programme was established around three strategies:

i) iodized salt for human consumption;
ii) iodinated injectable and orally administered oil in severely endemic areas;
iii) iodinated water, to be integrated in safe water for high risk places as an alternative.

Iron deficiency

Iron deficiency anaemia is the most common cause of nutritional anaemia in Indonesia. Iron is poorly absorbed from diets containing a large amount of cereal, average amounts of vegetables and pulses, and only a small proportion of meat or fish. It is prevalent in communities where parasitic infestation is high, particularly among children and pregnant women. Data from the National Household Health Survey in 1986 indicated a high percentage of pregnant mothers were anaemic, the highest being 73.9% in Kalimantan, and the lowest 57.5% in Yogyakarta. The data showed that anaemia was more prevalent in the third trimester of pregnancy, in a parity of five, and when the age was above 35 years. High prevalent anaemia (26–50%) was reported from scattered surveys in factory, plantation, construction workers, school children, and preschool children.

Intervention programmes have been established for vulnerable groups, particularly for pregnant women by means of iron pill distribution through health centres and *Posyandu*. An extensive anaemia programme was carried out by the Institute of Industrial Hygiene at the Ministry of Labour to prevent anaemia in the industrial workforce.

Current approaches to anaemia control in Indonesia include:

- Iron supplementation for pregnant women at *Posyandu* and health centres,
- Nutrition and health education,
- Food fortification (within limits).

Affluence–Related Nutrition Problems

The trend in food consumption in Indonesia towards the year 2000 (end of the second long–term development plan) depends primarily on the income growth scenario. With a 6% growth scenario, the transition from staple foods will accelerate over the next two decades. The growth in the per capita consumption of preferred foods, such as meat, fruit vegetables, and processed foods is expected to increase over the next two decades. It is encouraging, from the nutritional point of view, that according to a World Bank prediction, as regards meat consumption, the largest increase will be of poultry. The demand for meat, primarily beef, will not increase until a later stage of development (World Bank, 1992b).

The facts, however, indicate that an epidemiological transition is likely to happen very soon in Indonesia. Table 4.20 shows an initial changing profile of cause of death from communicable and infectious diseases to degenerative and metabolic ones. Meanwhile, an unofficial source indicates that the prevalence of Diabetes Mellitus among 55–65 year olds and those above 65 years of age is approximately 10% and 7 %, respectively. It is predicted that by the year 2020 there will be about 3.8 million Indonesians suffering from this disease. Cancer diseases, which are assumed to be related to nutrition, are also becoming an important cause of death in Indonesia. It seems that increasing incomes and life style changes in the middle and upper groups as a result of economic development, as well as the increasing number of the elderly as the result of demographic transition, may have some effects on the emergence of "affluence related malnutrition" in the decades to come especially in urban areas. A preparatory study for a national epidemiologic study on nutrition transition in Indonesia and nutrition education for early prevention of this problem will be part of the nutrition agenda for the sixth Five Year Development Plan starting in 1994.

V. COMMUNITY HEALTH AND FAMILY PLANNING

As previously discussed, Indonesia has made both impressive nutrition and economic improvements. Nutritional gains along with a decline in fertility, high coverage of immunization, and a better economic environment are all believed to account for the decline in infant mortality. In this context a short description on community health and family planning will be presented here. Indonesia's health policy goals, as articulated in the Fifth Five Year Plan are to:

- strengthen the emphasis on preventive and promotional health activities aimed at reducing maternal, infant and child mortality and morbidity, as well as fertility and nutritional status improvements.

- improve the quality of health services and associated referral systems.

- to achieve improvements in quality, efficiency, and management of health resources, and to actively promote the decentralization and integration of health plans and budgets.

- strengthen local resource mobilization and financial management,

- strengthen inter–agency co–ordination to facilitate these goals.

During the implementation, these general goals evolved to include a specific interest in promoting equity in the distribution of health resources, and in particular to allocating the resources necessary for ensuring that the health system in Eastern Indonesia is strengthened, and that health services reach the poor wherever they

are found. The need to rapidly improve health services through more efficient management at central, provincial and *kabupaten* levels has also emerged as a fundamental policy objective.

In addition to overall health policy, a national safe motherhood strategy outlines the following major activities:

– increasing awareness and the commitment of leadership to Safe Motherhood goals;

– improving the availability and use of information about maternal mortality and morbidity;

– strengthening maternal health care, including nutrition and family planning services at village, sub–district and district levels;

– improving skills for traditional birth attendants, midwives and other health professionals;

– strengthening the management and supervision of MCH services, particularly at district and provincial levels;

– improving information, education and communication activities directed towards Safe Motherhood goals; and

– improving the status of women.

In line with policy, Indonesia has made substantial investments in developing the basic infrastructure and human resources for a comprehensive primary health care delivery system, which also serves as the support base for outreach services. At present, each of the country's 3,400 sub–districts has at least one health centre, although the distribution of facilities is significantly less in very low density populations such as in the Eastern provinces. In some cases, principally in sparsely populated or remote areas, health centres are equipped with up to 10 beds and provide simple in–patient care. Linked to health centres, health sub–centres are supposed to provide basic care, including vaccination and health education. Planning targets specify a ratio of 3 or 4 health sub–centres per health centre and that each be staffed by a nurse or midwife. To facilitate maximum or complete out–reach of the service, each health centre, especially in sparsely–populated areas, is supported by mobile health centres in the form of cars, boats, motor cycles, bicycles, and even horses. The system also include an ambitious community out–reach programme aimed at reducing infant, child and maternal mortality and fertility. This programme is based on five key interventions – MCH services (typically antenatal care), immunization, diarrhoeal control, family planning, and nutrition at village integrated services posts, *or posyandu. Posyandus* are established by community organizations such as the Family Welfare Women's Movement (PKK) assisted by health centre staff. Activities are conducted by trained village volunteers (cadres) with technical assistance from nutrition, health, and family planning personnel at the health centre and sub–centre level.

Secondary and tertiary–level services are provided by general public hospitals at the district level. Public sector hospitals are classified according to the number of beds and the degree of specialization. Class A and class B hospitals, located in major cities are teaching hospitals and major referral centres. Class C (100 – 400 beds) and Class D (25 – 100 beds) are based at district level; the former are staffed with specialists in obstetrics, gynecology, and paediatrics, while the latter are typically staffed with general practitioners. Table 5.01 provides summary coverage of health care facilities.

Family planning in Indonesia has made great progress towards reducing fertility. Since 1970, the fertility rates have decreased by 40% due to a combination of family planning and the use of modern contraceptives, economic development and improved women's education. The remarkable declines in fertility, which have reached replacement levels in parts of Java, directly contribute to the reduction of maternal mortality risks through a reduced number of pregnancies, and also contributes to better infant health through reductions in the numbers of risky births. The, family planning programme can account for the significant reduction in annual population growth rates, from 2.32% in 1971 – 1980 to 1.97% in 1980 – 1990. The Indonesian family planning strategy is now being adopted as a model for countries in the Non Alignment Movement.

VI. COMMUNITY PARTICIPATION

In Indonesia, community participation is a natural development from a tradition known as *gotong royong*. This inherited cultural pattern of mutual help in the community has been adopted as one of the principle guidelines

for the national development of Indonesia. In rural development bottom−up planning and decision−making community institutions called "LKMD" have been established based on traditional village gatherings led by an elected village−head. In addition to the decision−making process, the LKMD in cooperation with government institutions such as health centres and sub−centres, agricultural extension, etc. organizes voluntary activities to support government programmes at village level.

In health and nutrition, community participation is vital for the UPGK programme. Without active participation of the village women's organizations, especially PKK, it is unlikely that a sustainable nutrition movement in the community could be achieved. It is well recognized that the key success of UPGK with its *Posyandus* is due to the nation−wide community participation, particularly of women. UPGK community participation takes many forms, including decisions to establish *Posyandus*, selection of cadres, the type and amount of donations for *Posyandu* activities whether in kind (rice, vegetables, fruit, eggs etc., for supplementary feeding) or in cash (for administration, travel, etc.), scheduling, and all managerial and leadership activities to keep the *Posyandu* running. Guidance and technical supports in the forms of training, simple equipment for education and demonstration, supplementary nutrients (vitamin A and iron) are provided by health personnel from the nearby health centre and/or from the local agricultural extension workers.

VII. MANPOWER AND INSTITUTIONAL SUPPORT IN NUTRITION

The first priority in running the nutrition institute newly transferred from the Dutch colonial government to the Indonesian government in the early 1950s, was manpower training for nutrition. Thus, the nutrition institute was re−organized and extended to become three different institutions: (i) the institution for programme development, now known as the Directorate of Nutrition, (ii) Schools for Nutrition at high school level, and the Academy of Nutrition for undergraduate level, and (iii) the Centre for Research and Development for Nutrition. For graduate training, nutrition divisions were established in the early 1960s at the medical schools at the University of Indonesia, Jakarta and at the School for Agriculture at the University of Agriculture, Bogor. The establishment of these institutions marked the second stage of the development of nutrition in Indonesia.

At present there are 3 types of institutions for nutrition professionals in Indonesia. For academic training: medical nutrition at the School of Medicine, public health nutrition at the School of Public Health and Agricultural Nutrition at the School of Agriculture of the University of Agriculture, Bogor. For public health nutrition and dietetic workers training is mostly undertaken at the Academy of Nutrition. Finally, grassroot−level nutrition workers are trained at The School of Assistant Nutritionists. The total number of professional nutrition workers is approximately 2,500 working at several institutions such as universities, district and sub−district health centres, hospitals, food industries, and R&D institutions. At village level, hundreds of thousands of PKK members are trained as nutrition promoters.

The Nutrition manpower cannot be effective in supporting nutrition activities if nutrition is not addressed in an integrated manner among the following institutions:

(a) Nutrition training institutions (universities or others);

(b) Research and development institutions for nutrition (in universities, ministries of health, agriculture and others);

(c) Nutrition programme−implementing−agencies (in the ministries of health, agriculture, industry, and education, etc.)

(d) Community organization/NGO's

(e) National and regional socio−economic development policy and programme institutions.

VIII. LESSONS LEARNED

The improvement in some of Indonesia's nutrition problems is one of the major achievements in national development in the 1980's. These achievements are: a robust economic growth, self−sufficiency in food, a sharp decline in infant mortality, a reduction in population growth, a significant reduction in the number of the

poor, and improvement of nutritional status (especially in vitamin A deficiency, and in energy malnutrition).

These achievements were feasible within a relatively short time (10–15 years) primarily due to the public awareness on nutrition has been built up at all policy and decision–making levels. In Indonesia one does not need anymore to "fight" for political will or policy commitment for nutrition priority. What is needed now is a sound cost–effective nutrition programme, one that, as well as being successful, will be in line with the priority guidelines of the national development plans.

How has nutrition awareness in Indonesia been "successfully" generated? According to a behavioural scientist, there are three conditions necessary for generating awareness that lead to positive attitudes and behavioural change in health and nutrition. The first lies in creating psychological readiness in the community or special target groups (such as politicians, policy and decision makers etc.). The second requires that existing positive " pressure groups" (professionals, politicians etc.) induce change. And thirdly, the existing physical and economic conditions which facilitate the behaviour change.

It is likely that the three conditions have influenced the present positive attitudes and commitment of the government and general public concerning nutrition. As described in part II, the "psychological readiness" for nutrition among policy makers in Indonesia is, the cumulative result of a nutrition education process initiated in 1950. This process has been "strengthened" by the role of international agencies in developing countries (WHO, FAO, UNICEF, World Bank, US–AID etc) as the positive "pressure group" for international concern on malnutrition. Finally, the most fundamental condition for nutrition to be recognized, adopted in policy and implemented in programmes, is the economic environment that is conducive towards including nutrition in various development programmes.

General Economic Conditions

The economic conditions conducive to improving nutrition are:

i) At the initial stage of development, agriculture should be the prime mover of economic growth to

– provide food and nutrition security for all people
– increase income primarily from rural employment
– lay the foundation for a stronger social and economic basis for economic growth and equity;

ii) There should be effective equity and poverty alleviation programmes as part of the objectives of economic development. In this case provision of integrated basic services for the poor, such as nutrition, basic education, primary health care, water supply and family planning, should be part of employment and income–generating activities.

iii) At macro–level, there should be a sound monetary and fiscal policy to ensure economic stability supported by a political policy to sustain social stability that induces the continuity and sustainability of development for economic growth and equity.

iv) There must be nutritional goals explicitly indicated as part of the outcomes of overall national development and these should be elaborated in sectoral development programmes, (primarily in agriculture, health, family planning and women's affairs).

Specific Nutrition Interventions

A sustainable community nutrition movement such as UPGK is a necessary condition for dealing with complex nutrition problems (PEM, vitamin A and iron deficiencies). It requires a basic infrastructure for community participation, such as nationwide village women's organizations, like PKK, and a village–level community–initiated basic health and nutrition service such as *Posyandu*, as the lowest referral system of district and sub–district health centres.

Vitamin A deficiency interventions using massive dose capsules distributed via *Posyandu* demonstrate cost effectiveness in a relatively "shorter" time in eradicating xerophthalmia and promoting child survival. With the nation–wide nutrition education movement it is expected that a natural maintenance (through vitamin A–rich foods) of better vitamin A status in children could be programmed via UPGK.

Reducing the prevalence and incidence of EPM, especially of severe and moderate forms, seems possible without special supplementary feeding at a rehabilitation centre, provided there are sustainable economic activities benefitting the poor, coupled with the provision of basic services. In this case, growth monitoring as a part of nutrition services at *Posyandu* is believed to play a key role as an entry point and for educational purposes. The growth promoting "effect" of weighing is a complementary outcome of integrated inputs provided at *Posyandu* and the mother's care at home. Therefore, the effectiveness of growth monitoring should not be evaluated as an isolated activity.

For IDD eradication, a combination of various interventions is likely to be programmed. For such a large, diverse population living in thousands of islands like Indonesia, where tens of thousands of people make their living producing "people's salt" as a home industry, conventional salt iodization does not seem effective. Iodized oil injections have been utilized for decades without achieving any significant reductions in IDD in Indonesia. More R & D on IDD interventions still has to be encouraged.

For iron deficiency anaemia, there have also been no significant benefits from using iron pills. A more effective delivery system will still have to be found. Otherwise, for iron deficiency eradication one probably has to rely more on economic improvement than on nutrition intervention.

Nutrition surveillance, developed in most critical areas of Indonesia in the 1970s is currently being redesigned for broader purposes such as the monitoring of children's growth at local, regional and national levels. This is to be part of the national social–economic household survey for national or regional policy and planning purposes.

IX. FUTURE NUTRITION AGENDA

i) Preparing food and nutrition policy for dual nutrition problems – poverty–related malnutrition and affluence–related malnutrition of the urban population.

ii) Improving the technical as well as the managerial capacity of nutrition workers responsible for running nutrition programmes, especially at local and regional levels, including NGOs and village nutrition cadres.

iii) Expansion of nutrition education for more effective communication and dissemination as the basis for a stronger community nutrition movement.

iv) Strengthening the technical and managerial capabilities of national nutrition institutions regarding: manpower, R & D, programme implementation, and policy, for better integrated planning based on up–dated technology of nutrition interventions.

v) Strengthening international technical cooperation primarily for manpower training and R & D in nutrition.

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TABLES

Table 3.01. Economic and Population Growth, 1970 – 1991

Year	Economic growth	Population growth
1970	7.5	
1971	7.0	
1972	9.4	
1973	11.3	
1974	7.6	average in 1971 – 1980
1975	5.0	2.42 per annum
1976	6.9	
1977	8.8	
1978	7.8	
1979	6.3	
1980	9.9	
1981	7.9	
1982	2.2	
1983	4.2	
1984	7.0	average in 1981 – 1990
1985	2.5	1.98 per annum
1986	5.9	
1987	4.9	
1988	5.8	
1989	7.5	
1990	7.4	
1991	6.3	

Note:

1. GDP in 1970 – 1980 used 1973 constant price
2. GDP in 1984 – 1991 used 1983 constant price

Table 3.02. Composition of Development Expenditure, 1979/80 – 1993/94

	(% of total)		
	REPELITA III Actual 1979/80–1983/84	**REPELITA IV Actual 1984/85–1988/89**	**REPELITA V Plan 1989/90–1993/94**

Infrastructure and production services	45.7	49.2	51.4
Human resources development and basic social services	22.9	26.1	32.2
Direct production	22.1	10.7	9.9
General services	9.3	14.0	6.5
Total	100.0	100.0	100.0

Source: Ministry of Finance and World Bank (1989)

Table 3.03. Shares of Gross Domestic Products and sectoral growth rates

	Shares (%)						**Real Growth Rate (% p.a)**		
	1969	**1970**	**1975**	**1980**	**1985**	**1990**	**1969–71**	**1979–80**	**1969–90**
Agricultural	36.8	35.2	28.4	24.6	22.7	19.4	3.8	3.4	3.7
Mining (incl. Oil)	22.7	23.7	26.9	24.1	18.2	15.1	10.1	0.4	4.5
Manufacturing	6.1	6.1	6.4	11.0	15.8	19.3	12.2	12.9	12.2
All other sectors	34.4	35.0	38.3	40.3	43.3	46.2	9.5	6.5	9.3
Total GDP	100.0	100.0	100.0	100.0	100.0	100.0	8.1	5.4	6.8
Population (million)	114.9	119.2	131.4	147.5	163.9	179.8	1.9	2.3	2.1

¶ Includes electricity and gas, construction, transport and communications, banking and other services

Sources: CBS Statistik Indonesia (1992) and World Bank (1992b)

Table 3.04. Provincial Income Distribution*)

	Low 20%		**Low 40%**		**High 20%**		**High 10%**		**High 20%/Low 20%**	
	1981	**1990**	**1981**	**1990**	**1981**	**1990**	**1981**	**1990**	**1981**	**1990**
Aceh	10.25	11.50	24.04	26.75	37.75	33.93	24.49	20.18	3.68	2.95
Nort Sumatera	10.68	10.47	24.50	25.58	37.00	35.98	22.88	21.21	3.46	3.44
West Sumatera	10.12	10.17	23.84	24.36	38.12	37.76	24.32	22.70	3.77	3.71
Riau	10.01	10.88	24.07	24.26	37.08	35.53	22.90	22.65	3.70	3.27
Jambi	11.33	10.88	26.34	26.64	33.98	34.85	20.46	19.87	3.00	3.20
South Sumatera	9.54	10.20	23.53	24.26	37.37	38.29	23.22	23.49	3.92	3.75
Bengkulu	11.04	10.66	24.92	25.47	36.40	37.18	21.82	23.74	3.30	3.49
Lampung	9.47	10.09	23.29	24.05	37.68	38.56	25.07	24.49	3.98	3.82
Jakarta	8.18	9.23	19.50	22.55	44.58	40.62	31.00	24.86	5.45	4.40
West Java	9.56	9.35	22.27	22.46	39.78	41.94	25.45	27.35	4.16	4.49

Central Java	8.94	9.82	21.58	23.32	42.24	39.58	26.91	25.20	4.72	4.03
Yogyakarta	7.98	8.83	19.62	20.11	45.70	45.20	30.65	30.72	5.73	5.12
East Java	8.16	9.30	20.27	22.34	42.26	40.12	28.11	25.62	5.18	4.31
Bali	9.68	9.26	25.20	23.08	38.97	39.79	25.87	25.36	4.03	4.30
W. Nusa Tenggara	9.41	10.28	21.75	23.03	41.06	40.44	26.97	26.71	4.36	3.93
E. Nusa Tenggara	9.51	9.82	22.28	21.96	39.12	39.36	24.46	24.52	4.11	4.01
East Timor	–	8.91	–	20.37	–	43.68	–	28.78	–	4.90
W. Kalimantan	9.97	10.01	24.00	23.23	36.80	39.11	22.36	23.93	3.69	3.91
C. Kalimantan	9.67	10.31	22.92	25.41	37.32	36.11	23.09	20.94	3.86	3.52
S. Kalimantan	9.67	10.26	22.91	25.68	38.70	36.62	23.34	21.86	4.00	3.57
E. Kalimantan	9.27	9.81	23.86	21.93	37.32	39.23	22.33	24.34	4.03	4.00
North Sulawesi	7.48	8.94	20.00	22.99	41.22	37.63	25.61	22.65	5.51	4.21
Central Sulawesi	8.56	8.99	21.20	23.71	41.76	37.93	27.12	22.72	4.88	3.80
South Sulawesi	9.12	9.08	22.42	22.09	39.55	39.52	25.97	24.19	4.34	4.35
SE. Sulawesi	8.35	9.78	20.67	22.19	40.82	40.93	26.04	25.35	4.89	4.19
Maluku	10.69	9.87	23.39	23.56	38.32	37.44	24.27	21.94	3.58	3.79
Irian Jaya	10.22	7.94	22.67	19.97	37.89	41.57	23.20	25.80	3.71	5.24
Indonesian	8.25	8.91	20.44	21.31	42.10	41.95	27.56	26.69	5.10	4.71

Source: Calculated from Susenas data

Note: *) Expenditure as proxi of income and income share represents the distribution

Table 3.05. Trends in the incidence of poverty

	1976	**1978**	**1980**	**1984**	**1987**	**1990**
	Incidence of poverty (%)					
Urban	38.8	30.8	29.0	23.1	20.1	16.8
Rural	40.4	33.4	28.4	21.2	16.4	14.3
Total	40.1	33.3	28.6	21.6	27.4	15.1
	Number of poor people (millions)					
Urban	10.0	8.3	9.5	9.3	9.7	9.4
Rural	44.2	38.9	32.8	25.7	20.3	17.8
Total	54.2	47.2	42.3	35.0	30.0	27.2

Source: CBS, 1990

Table 4.01. Per capita human consumption of major foods

Year	Rice	Maize	Wheat	Cassava	Sweet Potatoes	Soybeans	Peanuts	Sugar	Fruit	Vegetables	Fish	M
	Kg/yr											
1968 – 70	99.7	20.0	3.4	70.1	18.4	3.3	2.1	6.9	26.2	16.7	10.0	
1978 – 80	122.4	23.4	6.5	63.3	13.6	4.8	2.9	10.6	27.1	15.6	11.3	
1986 – 88	141.7	29.8	9.8	54.3	11.3	7.4	3.0	13.6	34.1	21.4	14.1	
	Growth Rates (% p.a)											
1970s	2.1	1.6	6.8	–1.0	–2.9	4.0	3.3	4.4	0.3	–0.7	1.2	
1980s	1.9	3.1	5.3	–1.9	–2.3	5.5	0.5	3.2	2.9	4.0	2.8	

Source: World Bank, 1992.

Table 4.02. Calorie intake by major food groups

Year	Total	Cereals	Root Crops	Meat Dairy Fish	Veg. Pulse	Fruit Veg. Oils	Other	Rice
	Calorie per person per day							
1968 – 70	1,947	1,243	267	48	70	156	163	1,065
1978 – 80	2,341	1,542	198	56	74	277	194	1,317
1986 – 88	2,675	1,863	171	76	87	318	160	1,551
	Share in Total Caloric Intake %							
1968 – 70		63.9	13.7	2.5	3.6	8.0	8.4	54.7
1978 – 80		65.9	8.5	2.4	3.2	11.8	8.3	56.3
1986 – 88		69.7	6.4	2.9	3.2	11.9	6.0	58.0

Source: World Bank, 1992

Table 4.03 Percentage of under five year children by category of nutrition status based on NCHS median weight for age, combined sexes

	1986				1989			
	Good	Mild	Mod.	Sev.	Good	Mild	Mod.	Sev.
Aceh	43.2	41.1	14.2	1.5	42.9	43.5	12.3	1.4
North Sumatera	53.8	35.4	9.7	1.2	51.8	34.5	11.4	2.3
West Sumatera	43.7	39.8	13.7	2.9	55.1	34.9	9.8	0.2
Riau	41.1	46.3	10.6	2.1	52.1	37.1	10.8	0
Jambi South	41.1	44.2	13.3	1.4	55.4	35.9	7.2	1.6
Sumatera	39.3	44.5	14.1	2.2	55.5	35.5	8.1	0.9

Bengkulu	52.6	33.5	11.2	2.7	51.8	41.2	6.6	0.4
Lampung	53.6	34.5	8.8	3.1	60.4	29.8	7.6	2.2
Jakarta	54.7	35.8	7.8	1.8	55.3	35.1	7.5	2.1
West Java	50.2	36.1	12.1	1.5	56.1	33.1	9.7	1.1
Central Java	50.8	36.7	10.9	1.6	58.9	31.1	9.2	0.8
Yogyakarta	59.8	33.3	6.3	0.6	69.6	25.2	4.6	0.6
East Java	51.5	35.9	11.1	1.6	53.7	35.7	9.5	1.1
Bali	70.8	24.8	4.1	0.3	69.1	26.1	4.4	0.3
West Nusa Tenggara	41.7	37.2	18.6	2.5	48.2	36.4	13.7	1.7
East Nusa Tenggara	40.1	36.7	19.1	4.1	45.7	37.5	15.5	1.3
East Timor	44.9	32.4	18.1	4.4	26.3	50.1	22.3	1.3
West Kalimantan	36.7	39.4	20.6	3.4	45.6	38.2	12.8	3.4
Central Kalimantan	30.5	53.1	15.1	1.3	50.4	39.6	9.6	0.4
South Kalimantan	40.4	43.2	14.7	1.7	41.7	42.7	13.1	2.5
East Kalimantan	52.3	35.1	10.4	2.1	56.4	37.8	5.4	0.4
North Sulawesi	55.7	32.5	10.1	1.7	66.9	25.7	6.9	0.4
Central Sulawesi	43.5	38.8	16.3	1.4	51.4	37.2	11.5	2.1
SE. Sulawesi	46.9	38.1	12.5	2.5	61.5	31.3	6.7	0.5
Maluku	na	na	na	na	60.6	27.1	11.7	0.6
Man Jaya	na	na	na	na	44.8	40.6	14.2	0.4
Indonesia	48.7	37.4	12.1	1.8	53.6	34.9	10.3	1.2

Source: Welfare indicators, BPS 1991 p.84

Note:

Good = 80% and over
Mild = 70% to 79.9%
Mod = 60% to 69.9%
Sev = below 60%
na = not available

Table 4.04 Percentage of under five year boys moderately underweight based on NCHS weight for age, by site of residence

	Urban		**Rural**		**Urban−Rural**	
	1986	**1989**	**1986**	**1989**	**1986**	**1989**

Aceh	13.4	13.1	20.1	18.9	18.6	18.3
North Sumatera	8.4	18.1	13.3	11.9	12.6	13.5
West Sumatera	4.5	8.9	18.9	9.7	17.3	9.6
Riau	3.9	9.1	15.2	18.1	13.1	14.9
Jambi	2.3	15.9	18.8	5.4	15.3	8.8
South Sumatera	22.1	14.5	16.8	6.4	18.3	8.9
Bengkulu	2.8	0	17.1	7.7	10.7	6.8
Lampung	11.3	4.8	10.5	7.4	10.7	6.8
Jakarta	9.1	11.1	13.6	0	9.6	11.1
West Java	13.7	3.1	15.5	14.1	15.2	11.7
Central Java	10.1	6.6	14.5	11.4	13.7	10.4
Yogyakarta	4.7	2.9	8.5	5.9	7.3	5.2
East Java	11.1	6.8	13.7	12.4	13.1	11.2
Bali	0	0	3.8	7.1	2.8	5.8
West Nusa Tenggara	17.5	17.1	21.2	16.5	20.6	16.6
East Nusa Tenggara	9.7	11.3	26.6	25.2	24.6	22.8
East Timor	0	0	20.4	27.7	20.4	27.7
West Kalimantan	14.1	5.7	28.2	16.5	25.5	15.1
Central Kalimantan	10.1	3.7	24.2	15.1	20.6	12.5
South Kalimantan	19.2	15.2	21.2	19.2	20.9	18.4
East Kalimantan	10.3	0	15.9	9.3	13.5	7.4
North Sulawesi	1.9	3.1	14.3	7.8	11.4	6.6
Central Sulawesi	16.7	10.6	20.5	14.6	19.8	13.6
South Sulawesi	10.2	12.1	13.9	14.8	13.1	13.9
SE. Sulawesi	8.9	2.2	12.9	10.1	12.1	8.2
Maluku	na	20.5	na	15.1	na	16.4
Man Jaya	na	14.3	na	17.9	na	16.4
Indonesia	10.3	8.8	16.1	13.6	14.7	12.5

Source: Status Gizi Balita 1986, 1987, 1989 BPS Jakarta
na: not available

Table 4.05 Percentage of underfive year girls moderately underweigth based on NCHS weight for age, by site of residence

	Urban		Rural		Urban–Rural	
	1986	**1989**	**1986**	**1989**	**1986**	**1989**
Aceh	7.3	14.8	10.4	6.2	9.8	7.1
North Sumatera	5.6	6.9	6.6	10.1	6.4	9.2
West Sumatera	11.4	2.6	9.8	11.6	9.9	10.1
Riau	3.7	6.1	9.1	7.2	8.1	6.8
Jambi	2.3	9.1	13.7	7.4	11.2	5.3
South Sumatera	6.9	12.3	10.1	5.6	9.2	7.1
Bengkulu	1.6	2.9	12.8	10.7	9.5	8.4
Lampung	4.7	2.6	7.2	9.4	6.8	8.4
Jakarta	5.1	3.8	10.1	0	5.6	3.8
West Java	4.5	2.8	10.5	9.4	9.2	8.1
Central Java	6.1	7.2	8.7	8.3	8.2	8.1
Yogyakarta	2.3	3.3	6.4	4.2	5.3	4.1
East Java	7.2	9.8	9.4	7.3	8.9	7.9
Bali	12.7	5.7	2.3	2.5	5.3	3.2
West Nusa Tenggara	10.1	8.8	17.7	11.3	16.7	10.8
East Nusa Tenggara	0	9.3	15.2	7.9	13.3	8.2
East Timor	0	0	15.3	16.7	15.3	16.7
West Kalimantan	6.3	8.6	18.3	10.6	15.6	10.3
Central Kalimantan	3.1	6.9	11.4	6.6	9.7	6.7
South Kalimantan	5.7	0	9.5	10.3	8.8	7.7
East Kalimantan	4.3	6.7	9.9	1.2	7.8	2.7
North Sulawesi	7.5	13.3	9.1	6.5	8.6	7.3
Central Sulawesi	5.9	5.1	13.9	10.3	12.3	8.9
South Sulawesi	11.3	9.6	11.3	6.6	11.3	7.7
SE. Sulawesi	14.7	2.1	12.9	6.2	13.3	5.1
Maluku	na	5.3	na	7.6	na	7.1

Man Jaya	na	8.9	na	13.4	na	11.8
Indonesia	6.1	6.2	10.3	8.5	9.3	7.9

Source: Status Gizi Balita 1986, 1987, 1989 BPS Jakarta
na: not available

Table 4.06 Percentage of underfive year girls severe underweight based on NCHS weight for age, by site of residence

	Urban		**Rural**		**Urban−Rural**	
	1986	**1989**	**1986**	**1989**	**1986**	**1989**
Aceh	0	0	2.9	1.4	2.3	1.3
North Sumatera	1.9	2.2	1.7	2.5	1.8	2.5
West Sumatera	0	0	3.4	0.4	3.1	0.4
Riau	5.9					
Jambi	2.3	0.1	0	1.2	1.1	0.7
South Sumatera	3.1	0	1.5	1.5	1.9	1.2
Bengkulu	1.6	0	3.4	1.2	2.9	0.8
Lampung	0	0	3.2	1.3	2.7	1.1
Jakarta	2.2	2.9	2.5	0	2.2	2.9
West Java	1.2	0.6	0.8	0.9	0.9	0.8
Central Java	0.8	0.6	1.9	0.5	1.7	0.5
Yogyakarta	0	0	0.8	0	0.6	0
East Java	0.3	0.6	1.3	1.3	1.1	1.1
Bali	0	0	0	0	0	0
West Nusa Tenggara	2.5	3.5	2.2	1.3	2.3	1.7
East Nusa Tenggara	3.1	0	3.1	0.8	3.1	0.7
East Timor	0	0	2.4	0.5	2.4	0.5
West Kalimantan	2.5	0	2.5	3.7	2.5	3.1
Central Kalimantan	0	0	2.4	0	1.9	0
South Kalimantan	0	2.6	2.1	2.6	1.6	2.6
East Kalimantan	1.1	0	3.3	0	2.4	0
North Sulawesi	1.9	0	3.1	0	2.7	0
Central Sulawesi	0	0	2.9	0	2.3	0
South Sulawesi	0.7	1.2	1.4	2.6	1.2	2.1

South East Sulawesi	0	0	2.3	2.8	1.8	0.6
Maluku	na	2.6	na	1.1	na	1.4
Irian Jaya	na	0	na	0	na	0
Indonesia	1.1	1.2	1.6	1.1	1.5	1.1

Source: Status Gizi Balita 1986, 1987, 1989 BPS Jakarta
na: not available

Table 4.07 Percentage of underfive year boys severe underweight based on NCHS weight for age, by site of residence

	Urban		**Rural**		**Urban–Rural**	
	1986	**1989**	**1986**	**1989**	**1986**	**1989**
Aceh	0	0	0.8	1.7	0.7	1.5
North Sumatera	1.3	3.4	0.3	1.7	0.6	2.2
West Sumatera	0	0	2.3	0	1.8	0
Riau	0	0	2.3	0	1.8	0
Jambi	2.3	0.1	0	1.2	1.1	0.7
South Sumatera	3.1	0	1.5	1.5	1.9	1.2
Bengkulu	1.6	0	3.4	1.2	2.9	0.8
Lampung	0	0	3.2	1.3	2.7	1.1
Jakarta	2.2	2.9	2.5	0	2.2	2.9
West Java	1.2	0.6	0.8	0.9	0.9	0.8
Central Java	0.8	0.6	1.9	0.5	1.7	0.5
Yogyakarta	0	0	0.8	0	0.6	0
East Java	0.3	0.6	1.3	1.3	1.1	1.1
Bali	0	0	0	0	0	0
West Nusa Tenggara	2.5	3.5	2.2	1.3	2.3	1.7
East Nusa Tenggara	3.1	0	3.1	0.8	3.1	0.7
East Timor	0	0	2.4	0.5	2.4	0.5
West Kalimantan	2.5	0	2.5	3.7	2.5	3.1
Central Kalimantan	0	0	2.4	0	1.9	0
South Kalimantan	0	2.6	2.1	2.6	1.6	2.6
East Kalimantan	1.1	0	3.3	0	2.4	0

North Sulawesi	1.9	0	3.1	0	2.7	0
Central Sulawesi	0	0	2.9	0	2.3	0
South Sulawesi	0.7	1.2	1.4	2.6	1.2	2.1
South East. Sulawesi	0	0	2.3	2.8	1.8	0.6
Maluku	na	2.6	na	1.1	na	1.4
Irian Jaya	na	0	na	0	na	0
Indonesia	1.1	1.2	1.6	1.1	1.5	1.1

Source: Status Gizi Balita 1986, 1987, 1989 EPS Jakarta
na: not available

Table 4.08. Percentage of under−five year children by category of nutrition status based on NCHS median weight for age, by zone

	1978 Boys				**1978 Girls**			
Zone n	**Sumatera**	**Java**	**Kalimantan §**	**Sulawesi**	**Sumatera**	**Java**	**Kalimantan §**	**Sulawesi**
	2612	**7198**	**3919**	**1915**	**2430**	**6815**	**3827**	**1720**
<60%	0.3	0.6	0.9	0.6	0.3	0.6	0.9	0.6
60 – 69.9%	10.9	14.9	13.7	12.6	8.9	14.0	12.7	12.7
70 – 79.9%	37.1	38.3	36.5	42.2	33.7	36.8	34.4	37.4
80 – 99.9%	44.6	40.3	41.5	38.3	49.4	41.0	42.9	43.4
100% up	7.1	6.0	7.4	6.2	7.5	7.4	9.3	6.0
	1989 Boys				**1989 Girls**			
Zone n	**Sumatera**	**Java**	**Kalimantan §**	**Sulawesi**	**Sumatera**	**Java**	**Kalimantan §**	**Sulawesi**
	2612	**7198**	**3919**	**1915**	**2430**	**6815**	**3827**	**1720**
<60%	1.6	1.2	2.1	1.5	1.0	0.9	1.4	1.3
60 – 69.9%	10.4	10.1	13.6	10.9	8.4	8.0	9.3	6.7
70 – 79.9%	41.5	38.1	39.3	36.5	32.0	29.9	31.5	28.6
80 – 99.9%	39.7	44.1	36.9	44.2	51.9	51.4	51.0	54.6
100% up	6.8	6.5	8.1	7.0	6.6	9.8	6.8	8.7

Note: § includes Kalimantan, Bali, Lombok, and Ambon

Table 4.09. Percentage of under−five year children by category of Z−score based on NCHS median weight for age, by zone

	1978 Boys				**1978 Girls**			
Zone n	**Sumatera**	**Java**	**Kalimantan §**	**Sulawesi**	**Sumatera**	**Java**	**Kalimantan §**	**Sulawesi**
	2612	**7198**	**3919**	**1915**	**2430**	**6815**	**3827**	**1720**
< −3SD	6.4	9.1	8.5	8.3	6.0	9.6	8.0	7.1

–3SD – 2SD	34.3	37.6	34.9	39.1	28.9	34.5	33.4	35.7
–2 SD – 0	52.3	47.4	49.2	46.5	57.7	48.5	49.3	51.4
0–up	7.0	5.9	4.7	6.2	7.4	7.3	9.2	5.9
	1989 Boys				**1989 Girls**			
Zone n	**Sumatera**	**Java**	**Kalimantan §**	**Sulawesi**	**Sumatera**	**Java**	**Kalimantan §**	**Sulawesi**
	2612	**7198**	**3919**	**1915**	**2430**	**6815**	**3827**	**1720**
< –3SD	8.7	7.3	10.2	8.1	6.1	6.0	7.3	8.1
–3SD – 2SD	36.7	34.1	38.8	33.6	29.9	27.1	28.2	36.8
–2 SD – 0	47.8	52.1	43.0	51.4	57.4	57.1	57.9	51.3
0 – up	6.7	6.5	7.9	6.9	6.6	9.8	6.7	3.7

Note: § includes Kalimantan, Bali, Lombok, and Ambon

Table 4.10a. Percentage of underfive year children by household expenditure bracket and category of nutrition status based on median Harvard weight for age, combined sexes

Monthly expenditure (Rp)		**Good**	**Mild**	**Mod. + Sev.**
1.	under 30,000	39.1	39.4	21.4
2.	30,000 – 39,999	40.9	42.5	16.6
3.	40,000 – 49,999	45.8	40.1	14.1
4.	50,000 – 74,999	49.8	38.7	11.6
5.	75,000 – 99.999	54.7	35.5	9.8
6.	100,000 – 149.999	57.2	32.6	10.2
7.	150,000 – 199,999	61.7	31.1	7.2
8.	200,000 – 299,999	62.7	30.8	6.4
9.	300,000 – 399,999	72.1	23.7	4.3
10.	400,000 – 499,999	83.1	15.2	1.9
11.	500,000 UP	82.1	16.2	1.8

Note:
Good = 80% and over
Mild = 70% to 79.9%
Mod + Sev = below 70%

Source: CBS, 1991

Table 4.10. Z–Score of weight–for age by Quartile of Expenditure per AEU

	Quartile Expenditure §				
Category	**1 (%)**	**2 (%)**	**3 (%)**	**4 (%)**	**All (%)**
Total (n=26428)					

Z–score ? –2	47.9	45.0	41.8	33.4	41.4
–2 < Z–score ? –1	39.5	41.3	42.4	43.1	41.7
–1 < Z–score ? 0	9.2	9.9	10.9	14.7	11.5
0 < Z–score ? 1	2.6	2.5	3.5	5.8	3.7
1 < Z–score ? 2	0.6	0.9	1.1	2.3	1.3
Z–score > 2	0.2	0.4	0.3	0.7	0.4
Urban (n=8007)					
Z–score ? –2	38.0	37.7	33.8	27.6	31.3
–2 < Z–score ? –1	43.3	43.6	44.3	45.1	44.5
–1 < Z–score ? 0	13.0	12.8	15.1	17.4	15.9
0 < Z–score ? 1	4.0	3.8	5.3	6.6	5.7
1 < Z–score ? 2	1.5	1.8	1.4	2.5	2.1
Z–score > 2	0.2	0.3	0.1	0.8	0.5
Rural (n=18421)					
Z–score ? –2	48.9	45.5	44.7	39.4	45.3
–2 < Z–score ? –1	39.2	40.9	41.7	41.1	40.6
–1 < Z–score ? 0	8.8	9.4	9.4	11.9	9.7
0 < Z–score ? 1	2.4	2.2	2.9	4.9	3.0
1 < Z–score ? 2	0.5	0.6	1.0	2.0	1.0
Z–score > 2	0.2	0.4	0.3	0.7	0.4

§ 1= lowest quarter, 4 = highest quarter
Computed from Susenas 1987
Source: Jus'at, 1991

Table 4.11. Birthweight distribution in West and East Java

Birthweight (kg)	**West Java § (n =2,335)**	**East Java¶ (n = 667)**
<2.0	2.5	0.8
2.0 – 2.4	8.9	7.6
2.5 – 2.9	38.2	30.6
3.0 – 3.4	29.6	51.9
>3.5	10.8	9.1

§ West Java: 1978–1980 (Alisyahbana, 1983)
¶ East Java: 1981–1983 (Kardjati, 1985)

Table 4.12. Incidence of Low Birth Weight in Indonesia

Location	**Researcher(s)**	**% LBW**	**Note**
North Sumatera	Chalik, et al, 1982	9.9	Hospital

Jakarta	Riono, 1989	9.4	16 Maternety Clinics
Jakarta	Widyaningsih, 1989	10.9	5 Hospital
Bogor, West Java	Harlan, 1991	10.2	Hospitals, Maternity Clinics, TBA's
West Sumatera *)	Farida, 1991	11.3	Hospital and Maternity Clinics
Central Jakarta*)	Farida, 1991	9.3	Hospitals and Maternity Clinics
Bandung, West Java	Alisjahbana, et al, 1987	8.9	Maternity Clinics
		14.7	Ujung Berung (semi urban area)
		17.5	Hasan Sadikin Hospital
Sukabumi, West Java	Djaja, et al, 1987	10.7	Rural Areas
Bogor, West Java	Husaini, et al, 1985	10.4	Rural Areas
Sampang, Madura, East Java	EJPS, 1991	9.0	Rural Areas
Pacitan, East Java	Sutrisna, et al, 1991	20.2	Health Centers
East Nusa Tenggara	Passchier, 1991	13.3	4 villages of Kupang Tengah sub−district

*) Using PR−5 form
Compiled by Jus'at, 1992

Table 4.13. Infant Mortality Rate per 1000 live births by sex and province, 1980, 1985 and 1990

Province		**1980 1)**		**1985 2)**		**1990 3)**
		Male	**Female**	**Male**	**Female**	
1.	Aceh	98.8	82	68.9	55.2	52
2.	North Sumatera	97.5	80.9	69.9	56.1	56
3.	West Sumatera	132.4	112.1	92.7	76.5	64
4.	Riau	122.6	103.4	83.2	68	57
5.	Jambi	196.6	109.6	85	69.6	63
6.	South Sumatera	106.4	88.9	66.9	61.6	65
7.	Bengkulu	115.6	97.1	71.1	57.3	61
8.	Lampung	106.4	88.9	66.9	53.5	63
9.	DKI Jakarta	88.7	73	45	34.3	35
10.	West Java	141	119.7	90.6	74.6	79
11.	Center Java	106.4	88.9	71.3	57.4	59
12.	D.I. Yogyakarta	69.9	56.1	42.3	32	39
13.	East Java	108.9	91.1	76	61.6	57
14.	Bali	97.9	80.9	65.1	51.9	45
15.	West Nusa Tenggara	202	173	124.1	105.1	123
16.	East Nusa Tenggara	135.2	114	87.4	71.7	66

17.	East Timor	–	–	106.6	89.1	85
18.	West Kalimantan	126.8	107.1	85.3	69.9	72
19.	Center Kalimantan	108.9	91.1	76.3	61.8	50
20.	South Kalimantan	132.4	100.4	91.6	75.5	82
21.	East Kalimantan	108.9	91.1	71.1	57.3	51
22.	North Sulawesi	103.8	86.6	72.8	58.7	57
23.	Center Sulawesi	139.4	118.3	102.5	85.3	82
24.	South Sulawesi	117	98.4	74.6	60.3	62
25.	South East Sulawesi	126.8	107.1	81.9	66.8	68
26.	Maluku	135.8	114.6	93.5	77.2	66
27.	Irian Jaya	117	98.4	90	74.1	74
INDONESIA		118	109	73.7	59.5	63

Source:
1) 1980 Population Cencus;
2) 1985 Intercencal Population Survey;
3) 1990 Population Cencus (male/female not yet available)

Table 4.14. Life Expectancy at births by sex and province, 1980 and 1990

Province		**1980**		**1990**	
		Male	**Female**	**Male**	**Female**
1.	Aceh	54.2	57.5	60.8	64.5
2.	North Sumatera	54.4	57.7	60.3	63.9
3.	West Sumatera	48.3	51.2	57.5	60.9
4.	Riau	49.9	53	59.4	63
5.	Jambi	48.8	51.7	57.6	61
6.	South Sumatera	52.8	56	58.1	61.6
7.	Bengkulu	51.1	54.2	58.5	62
8.	Lampung	52.8	56	58.5	62
9.	DKI Jakarta	56	59.5	64.3	68.2
10.	West Java	46.9	49.7	54.2	57.4
11.	Center Java	52.8	56	59.4	62.9
12.	D.I. Yogyakarta	58.9	63.5	64.7	68.5
13.	East Java	52.3	55.5	59.7	63.3
14.	Bali	54.4	57.7	62.5	66.2
15.	West Nusa Tenggara	38	40.7	44.6	47.3
16.	East Nusa Tenggara	47.8	50.7	56.9	60.3
17.	East Timor	–	–	55.3	58.6

18.	West Kalimantan	49.2	52.2	56	59.3
19.	Center Kalimantan	42.3	55.5	61	64.7
20.	South Kalimantan	48.3	51.3	54.1	57.3
21.	East Kalimantan	52.3	55.5	60.8	64.5
22.	North Sulawesi	53.2	56.5	59.8	63.4
23.	Center Sulawesi	47.1	50	53.8	57
24.	South Sulawesi	50.9	54	58.3	61.7
25.	South East Sulawesi	49.2	52.5	56.8	60.2
26.	Maluku	47.8	50.7	57	60.4
27.	Irian Jaya	50.9	54	56.2	59.5
INDONESIA		50.6	53.7	58.1	61.5

Source: CBS. Population Census 1980 and 1990

Table 4.15. Estimated Maternal Mortility Ratio (MMR) in Indonesia

Location	Researcher(s)	MMR	Note
South Sumatera	Monazer, et al, 1990	5.7	Hospitals
West Java	Chi I–Cheng, et al, 1981	3.7	12 Hospitals
West Java	Budiarso, 1991	5.1	Rural areas
Central Java	Anonymous, 1990	3.6	BKKBN study
Ujung Berung–West Java	Alisyahbana, et al, 1983	1.7	Rural Areas
Mojokerto–East Java	Soemantri, 1989	3.97	1500 households in 19 subdistric
NHHS	Budiarso, 1980	1.5	7 Provinces
Bali	Susanti, et al, 1987	7.2	Rural areas
Sukabumi–West Java	Budiarso, et al, 1989	4.7	Rural Areas
NHHS	Budiarso, et al, 1987	4.5	7 Provinces
– Yogyakarta		1.3	
– Bali		2.3	
– North Sulawesi		2.1	
– Bengkulu		4.9	
– West Kalimantan		5.2	
– Maluku		4.9	
– West Nusa Tenggara		7.8	
East Nusa Tenggara	Tjitra, et al, 1991	13.4	Rural Areas
Central Java	Agoestina, et al, 1989	3.4	Rural Areas
Tanjung Sari–West Java	Ngantung, et al, 1990	4.9	Rural areas
West Java	Budiarso, et al, 1991	4.9	8 Districts

	– Bandung		4.5	
	– Indramayu		5.1	
	– Tasikmalaya		5.6	
	– Pandegelang		4.5	
	– Karawang		3.7	
	– Bekasi		6.7	
	– Kuningan		3.6	
	– Cirebon		6.5	

NHHS = National Household Health Survey

Table 4.16. Average maternal energy and nutrients intake per day

		Bogor		**Indramayu and Purwakarta**		**Gunung Kidul**	
Nutrients		**P**	**NP**	**P**	**NP**	**P**	**NP**
Energy	(kcal)	1513	1621	1629	1499	1331	1783
Protein	(g)	41	44	41	40	29	24
Fat	(g)	17	14	18	16	19	18
Iron	(mg)	12	13	10	8	15	12

P = pregnant; NP = non–pregnant
Source: Martoatmodjo, et al, 1973

Table 4.17. Changes in prevalence of xerophthalmia in 15 Provinces as a public health problem, 1978

		Prevalence per 100		
Province		**X1B**	**X2/X3**	**XS**
1.	Aceh	2.4	0.484	0.161
2.	West Nusa Tenggara	1.6	0.212	0.212
3.	Bengkulu	0.7	0.217	0.217
4.	West Sumatera	1.3	0.164	0.164
5.	South Sumatera	0.3	0.165	0.495
6.	West Java	1.5	0.096	0.217
7.	Central Java	1.0	0.044	0.153
8.	Central Kalimantan	0.7	0.220	0.000
9.	Bali	0.8	0.075	0.226
10.	South Sulawesi	0.4	0.081	0.081
11.	Maluku	2.0	0.000	0.194
12.	South Kalimantan	1.5	0.000	0.147

13.	West Kalimantan	0.4	0.000	0.217
14.	North Sumatera	0.4	0.000	0.216
15.	South East Sulawesi	0.5	0.000	0.037

Table 4.18. Changes in prevalence of xerophthalmia in 5 Provinces, 1978 – 1986

	Prevalence per 100			
Province	**1978 survey**		**1986 survey**	
	X1B	**X2/X3**	**X1B**	**X2/X3**
Aceh	2.40	0.484	1.28	0.10
West Java	1.50	0.100	0.14	0.00
Central Java	1.10	0.040	0.91	0.00
West Nusa Tenggara	1.60	0.212	0.24	0.04
South Sulawesi	0.40	0.081	0.26	0.00
Weighted average	1.16	0.21	0.67	0.03

Source: Kodyat, et al., Proceedings of Regional Vitamin A Meeting, Jakarta, November 3–5, 1988

Table 4.19. Comparison of prevalence of xerophthalmia in 1978 and 1986 in 3 provinces

	Prevalence per 100			
Province	**1978 survey**		**1986 survey**	
	X1B	**X2/X3**	**X1B**	**X2/X3**
West Java	1.50	0.100	0.14	0.00
South Sulawesi	0.40	0.081	0.26	0.00
West Kalimantan	0.40	0.000	0.16	0.00
Weighted average	1.18	0.08	0.20	0.00

Source: Muhilal, et al., Gizi Indonesia, 1990, 15:7–12

Table 4.20. The Cause of Death in Indonesia

Cause of Death		**1986 (%)**	**1992 (%)**
1.	Cardio Vas. Ds.	9.2	15.3
2.	Tuberkulosis	6.5	11.1
3.	Pneumonia/ARI	6	9.9
4.	Diarrhea	11.4	7.2
5.	Other Inf. Ds.	13.5	6.6
6.	Bronch., Emph., Asth.	3.8	5.5
7.	Injur, Accid. Intox	5	5.4
8.	Neoplasm.	4.2	4.9

9.	Tetanus	4.86	1.3

Source: 1985/1986 and 1992 National Health Household Survey

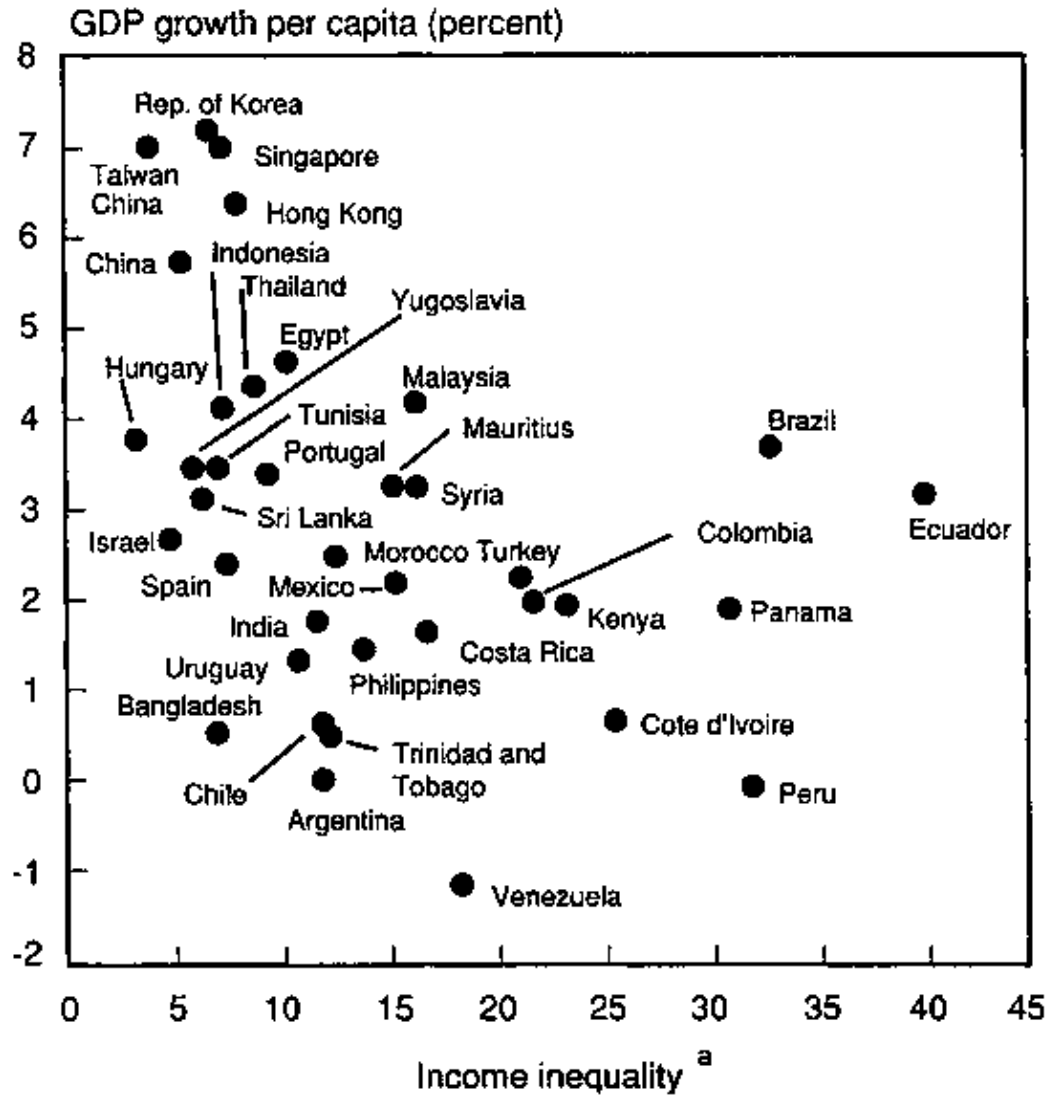
Table 5.01. Provincial Distribution of Health Facilities, 1990

	Hospital		Health Centres				
	Beds per 1.000	**Doctors per−bed**	**coverage (km2)**	**Doctor per center**	**Sub−center coverage (km2)**	**Posyandu coverage (km2)**	**Pop'n density (per km2)**
Aceh	0.46	0.064	294.64	0.6	83.55	16.15	61
North Sumatera	1.05	0.059	207.59	1.3	52.13	6.07	150
West Sumatera	0.81	0.092	282.83	1.0	72.25	6.28	81
Riau	0.45	0.057	727.39	1.2	183.61	31.38	32
Jambi	0.38	0.081	426.67	0.8	96.97	16.16	47
South Sumatera	0.67	0.074	416.42	1.1	128.97	19.28	60
Bengkulu	0.35	0.116	192.44	0.8	55.85	8.57	55
Lampung	0.24	0.070	201.86	1.0	68.82	4.71	225
Jakarta	1.59	0.147	1.87	1.2	–	0.06	16,186
West Java	0.34	0.086	49.84	1.1	31.24	1.18	747
Central Java	0.54	0.078	41.77	1.1	22.18	0.78	836
Yogyakarta	1.10	0.175	26.19	1.0	10.71	0.53	984
East Java	0.51	0.095	52.37	1.0	23.14	1.03	698
Bali	0.91	0.127	51.02	1.6	13.87	1.19	510
West Nusa Tenggara	0.23	0.101	188.57	0.8	57.65	4.22	163
East Nusa Tenggara*	0.50	0.040	295.53	0.5	80.06	9.55	71
East Timor*	–	0.073	222.00	1.7	61.98	9.44	48
West Kalimantan	0.57	0.037	824.49	1.0	231.48	49.40	22
Center Kalimantan	0.35	0.095	1,282.35	0.8	253.49	57.93	9
South Kalimantan	0.65	0.057	206.92	0.6	73.41	4.21	56
East Kalimantan	1.11	0.051	1,645.85	1.3	547.14	68.02	9
North Sulawesi	1.02	0.082	103.39	0.9	29.63	4.78	133
	0.67	0.070	774.73	1.1	141.43	18.51	25

Central Sulawesi							
South Sulawesi	0.76	0.078	225.33	0.6	90.30	10.39	99
South East. Sulawesi	0.49	0.045	249.42	0.7	69.22	10.01	48
Maluku*	0.85	0.038	596.04	0.6	166.68	28.25	25
Irian Jaya*	0.94	0.037	2,604.82	0.4	850.77	307.57	4
Indonesia	0.61	0.089	290.59	1.0	108.21	7.86	95

Source: Indonesian Health Profile, Departement of Health, 1990
* Most eastern part of Indonesia

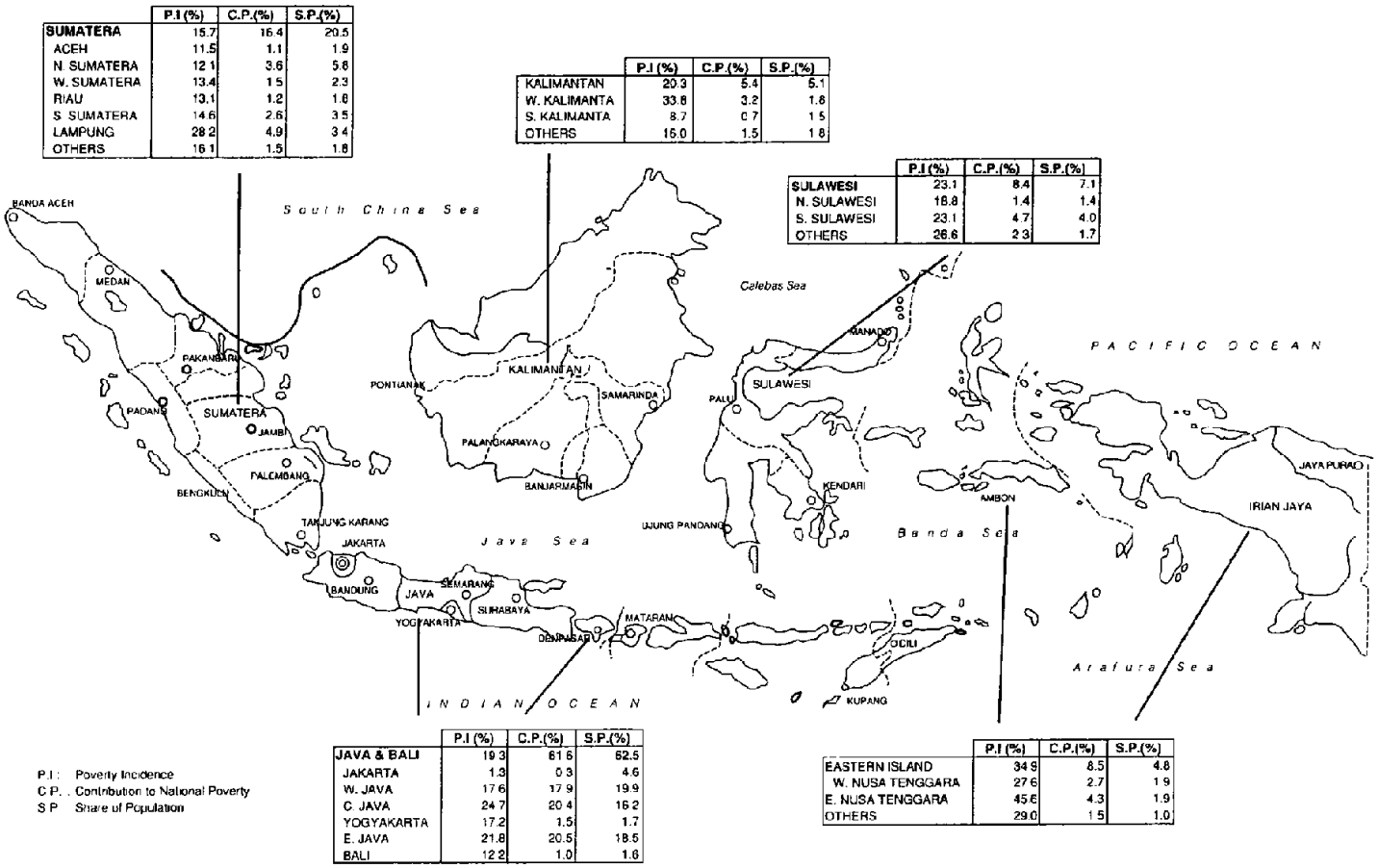
FIGURES



a. The ratio of the income shares of the richest 20 percent and poorest 20 percent of the population. Data on income distribution are from surveys conducted mainly in the late 1960s and early 1970s.

Figure 3.01: Income inequality and the growth of GDP in selected economies, 1965–89

Source: World Development Report, 1991



	P.I (%)	C.P.(%)	S.P.(%)
SUMATERA	15.7	16.4	20.5
ACEH	11.5	1.1	1.9
N. SUMATERA	12.1	3.6	5.8
W. SUMATERA	13.4	1.5	2.3
RIAU	13.1	1.2	1.8
S. SUMATERA	14.6	2.6	3.5
LAMPUNG	28.2	4.9	3.4
OTHERS	16.1	1.5	1.8

	P.I (%)	C.P.(%)	S.P.(%)
KALIMANTAN	20.3	5.4	5.1
W. KALIMANTA	33.8	3.2	1.8
S. KALIMANTA	8.7	0.7	1.5
OTHERS	16.0	1.5	1.8

	P.I (%)	C.P.(%)	S.P.(%)
SULAWESI	23.1	8.4	7.1
N. SULAWESI	18.8	1.4	1.4
S. SULAWESI	23.1	4.7	4.0
OTHERS	26.6	2.3	1.7

	P.I (%)	C.P.(%)	S.P.(%)
JAVA & BALI	19.3	61.6	62.5
JAKARTA	1.3	0.3	4.6
W. JAVA	17.6	17.9	19.9
C. JAVA	24.7	20.4	16.2
YOGYAKARTA	17.2	1.5	1.7
E. JAVA	21.8	20.5	18.5
BALI	12.2	1.0	1.6

	P.I (%)	C.P.(%)	S.P.(%)
EASTERN ISLAND	34.9	8.5	4.8
W. NUSA TENGGARA	27.6	2.7	1.9
E. NUSA TENGGARA	45.6	4.3	1.9
OTHERS	29.0	1.5	1.0

P.I : Poverty Incidence
C.P. : Contribution to National Poverty
S.P. : Share of Population

Figure 3.02. REGIONAL DISTRIBUTION OF POVERTY (1990)

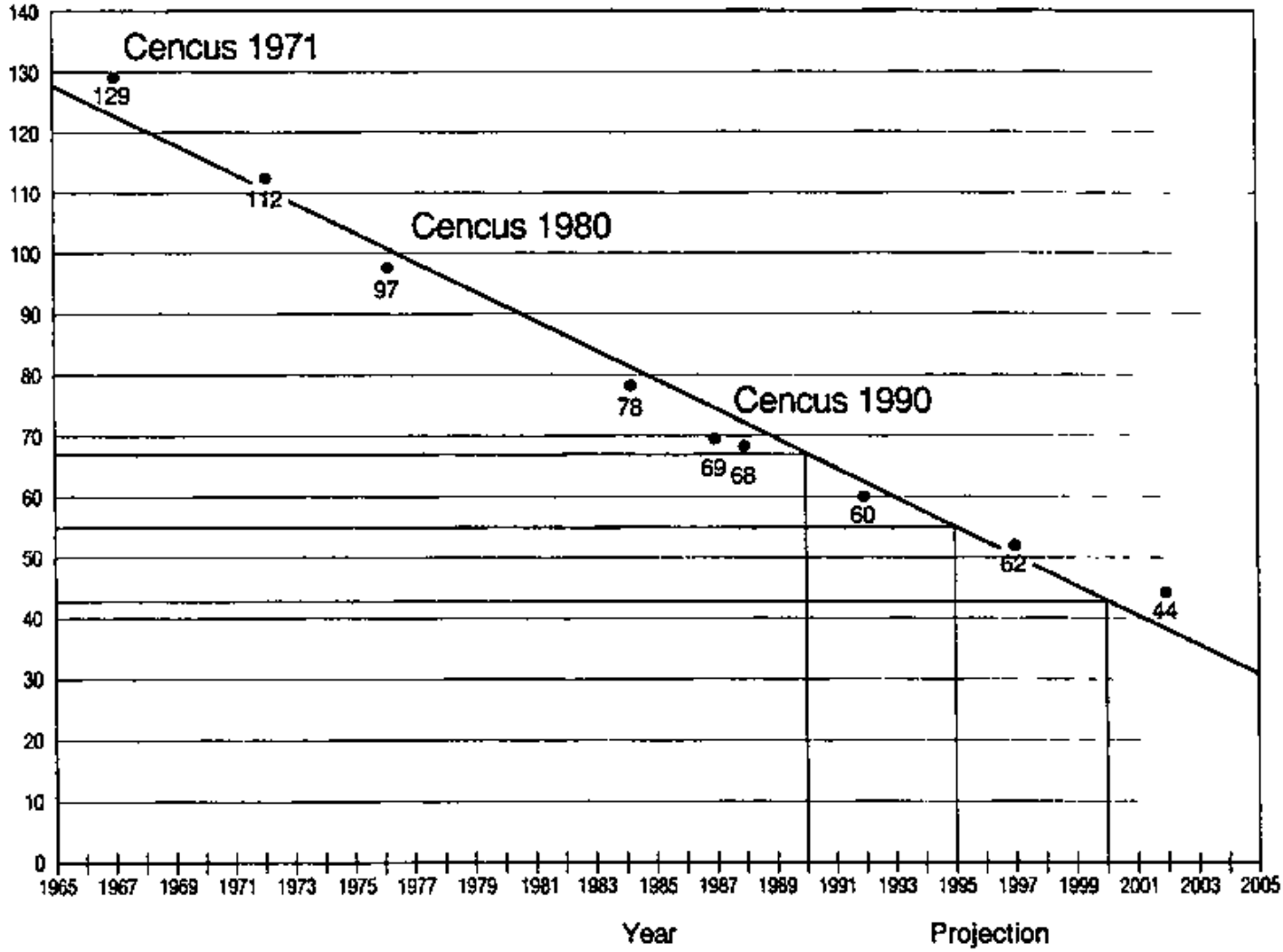


Figure 4.00: Trends infant mortality in Indonesia 1970 – 1990

Source: CBS. Census Data Projection in: Draft Situation Analysis of Children and Women in Indonesia. BAPPENAS – UNICEF. 1992

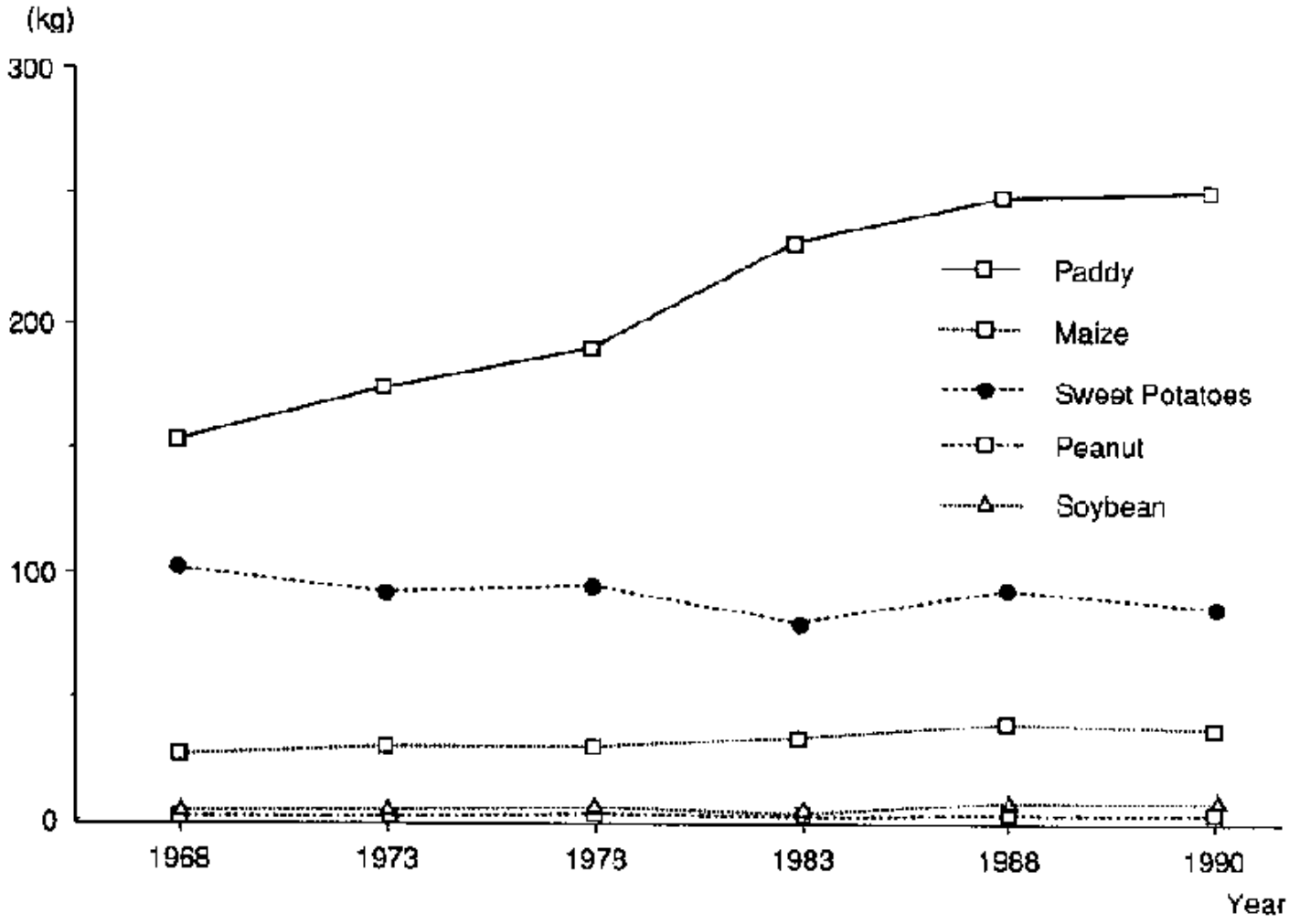


Figure 4.01.: Trends in food production per capita, 1968 – 1990

Source: Bappenas, 1991

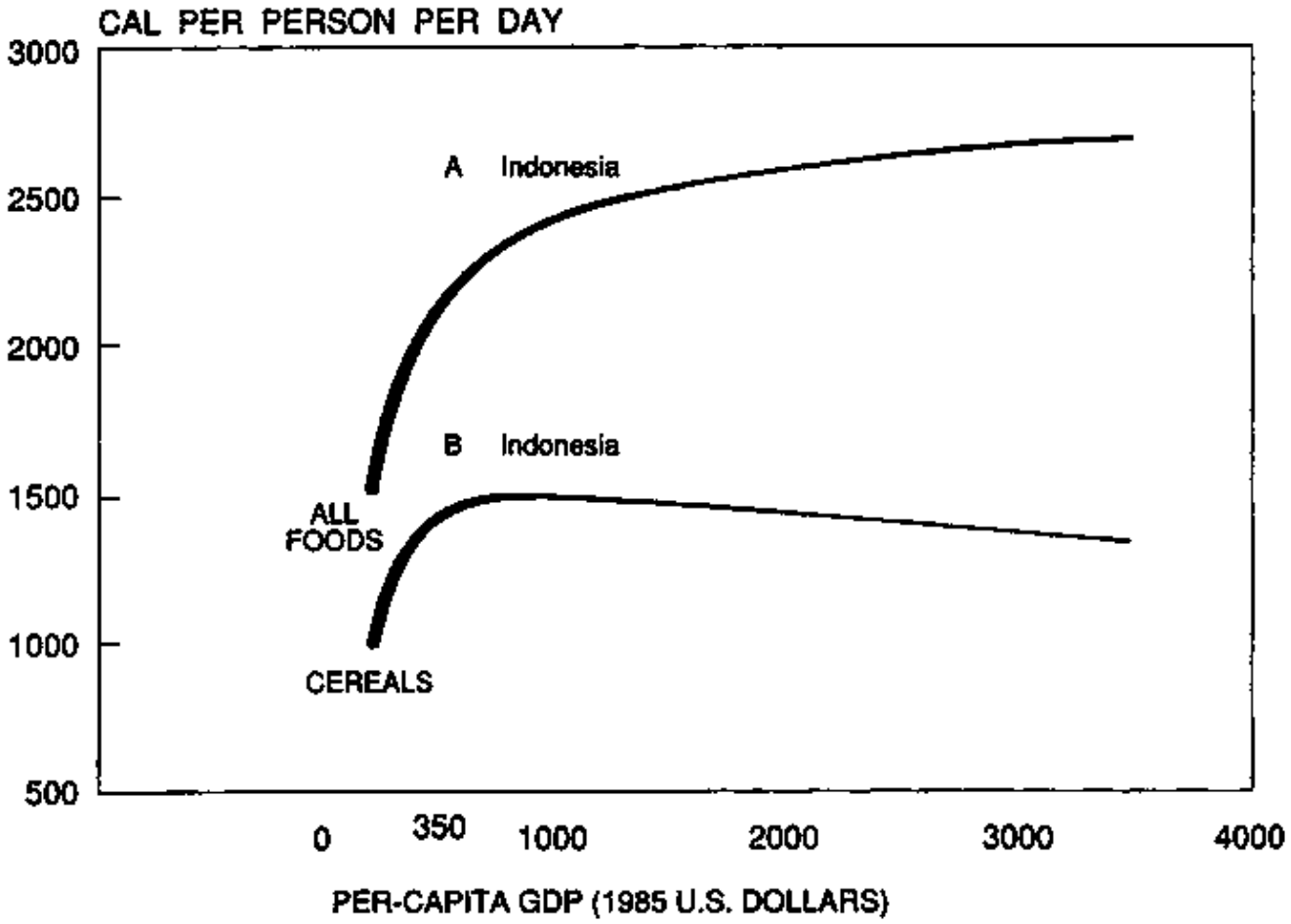


Figure 4.02.: Calorie consumption by income average for seven Asian countries.

Source: World Bank (1992)

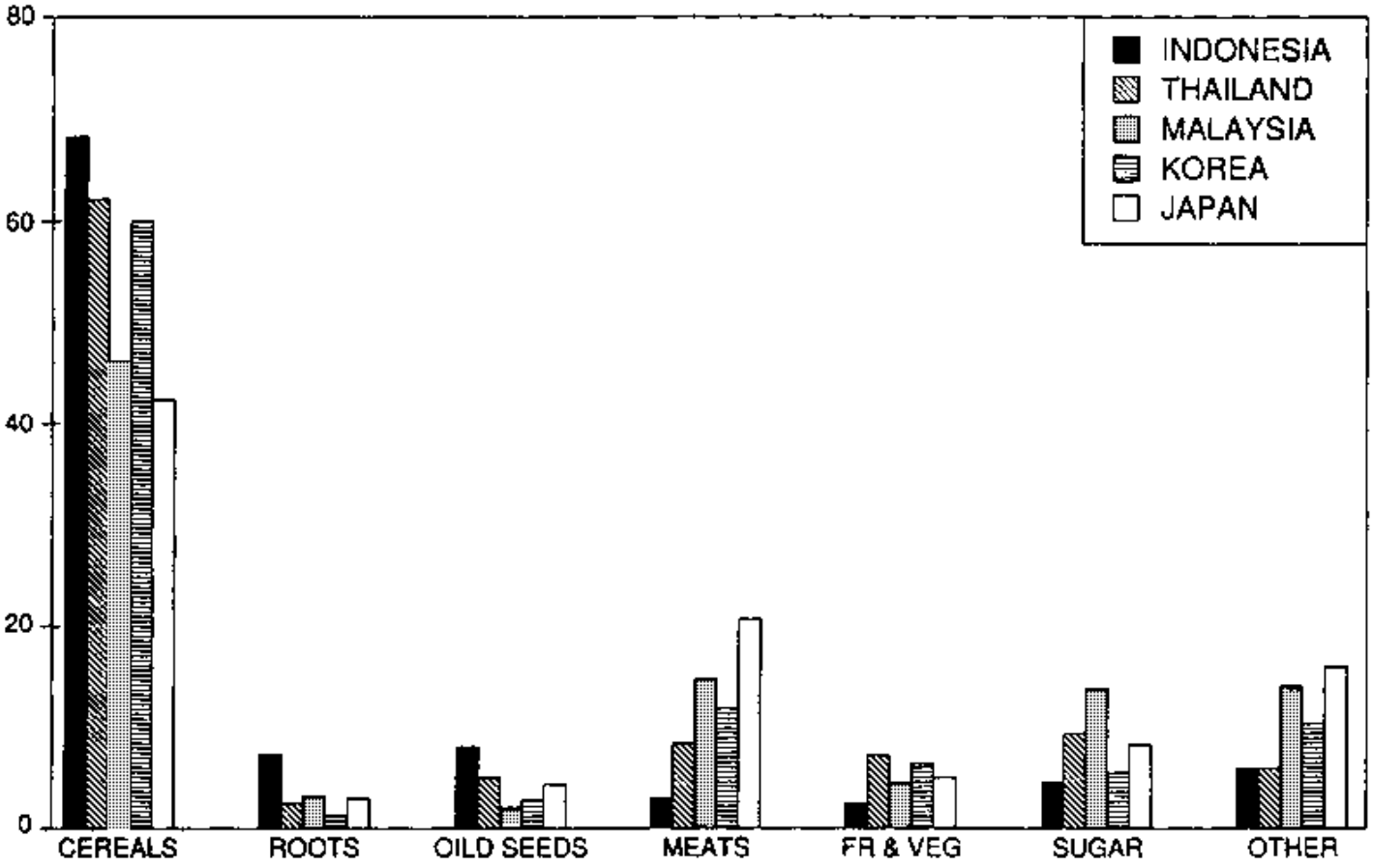


Figure 4.03.: Share of various foods in total calories consumed

Source: World Bank (1992)

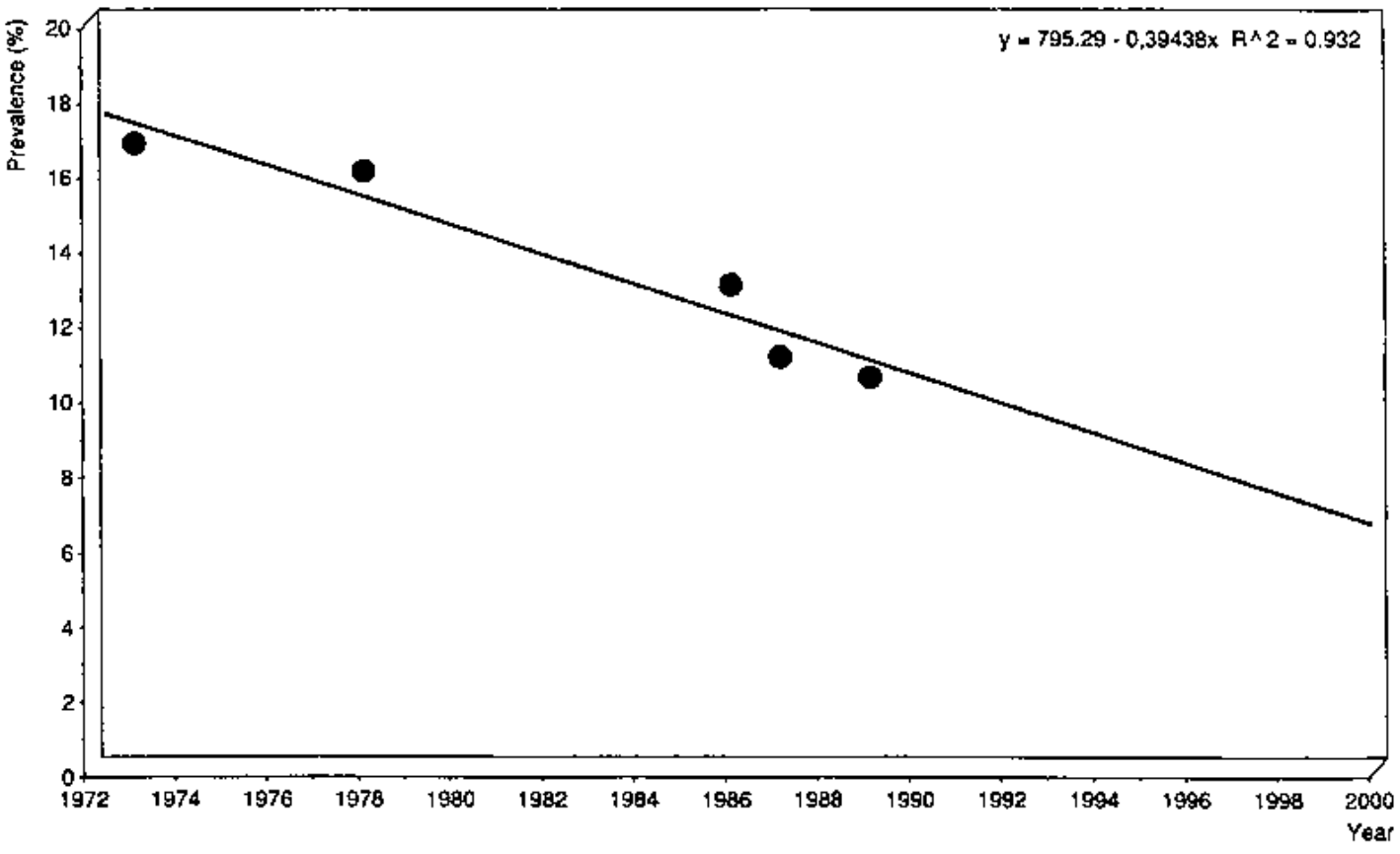


Figure 4.04.: Trend of national malnutrition levels.

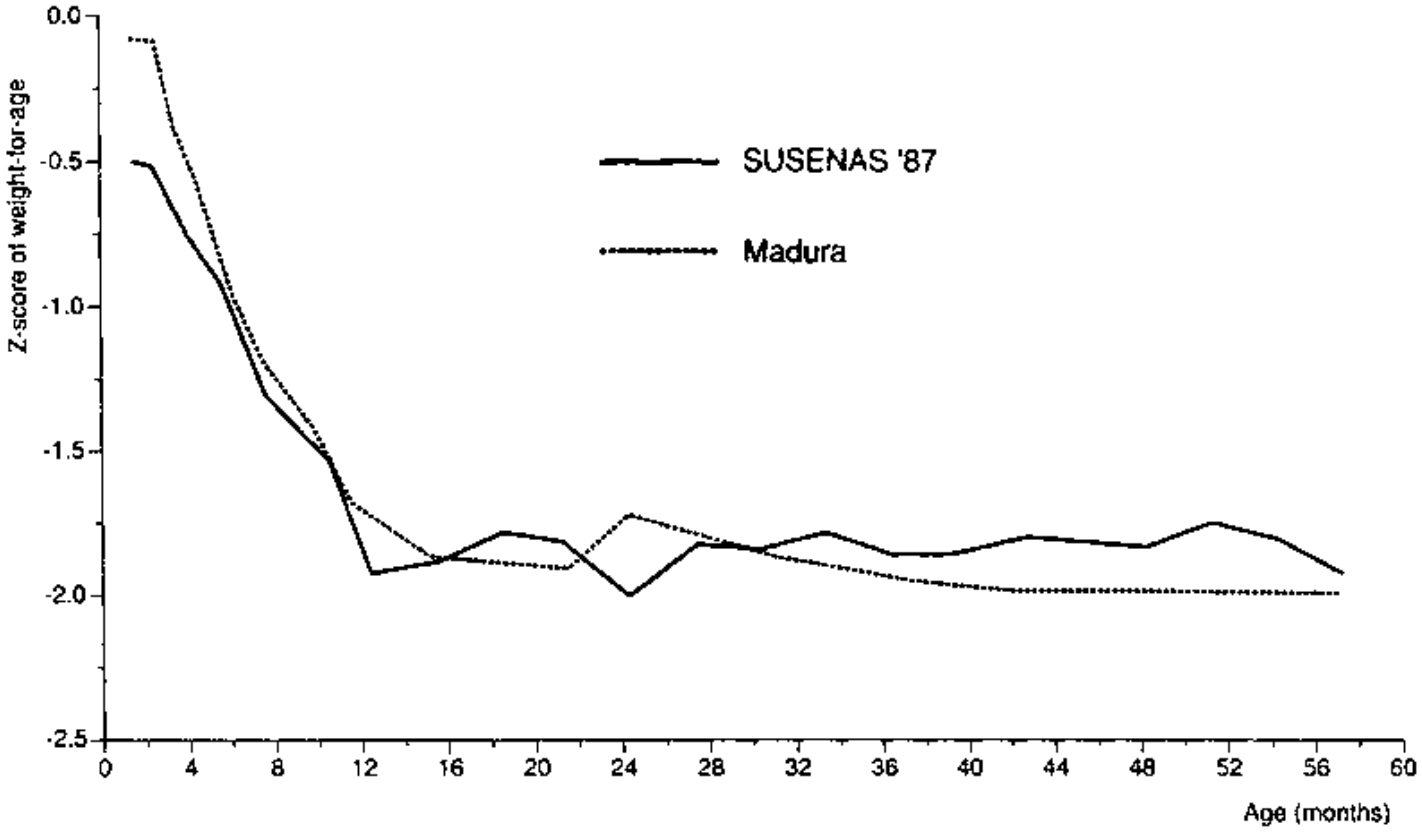


Figure 4.05.: Mean z–score of weight–for–age by age in months

Source: Jus'at, 1991; EJPS, 1991

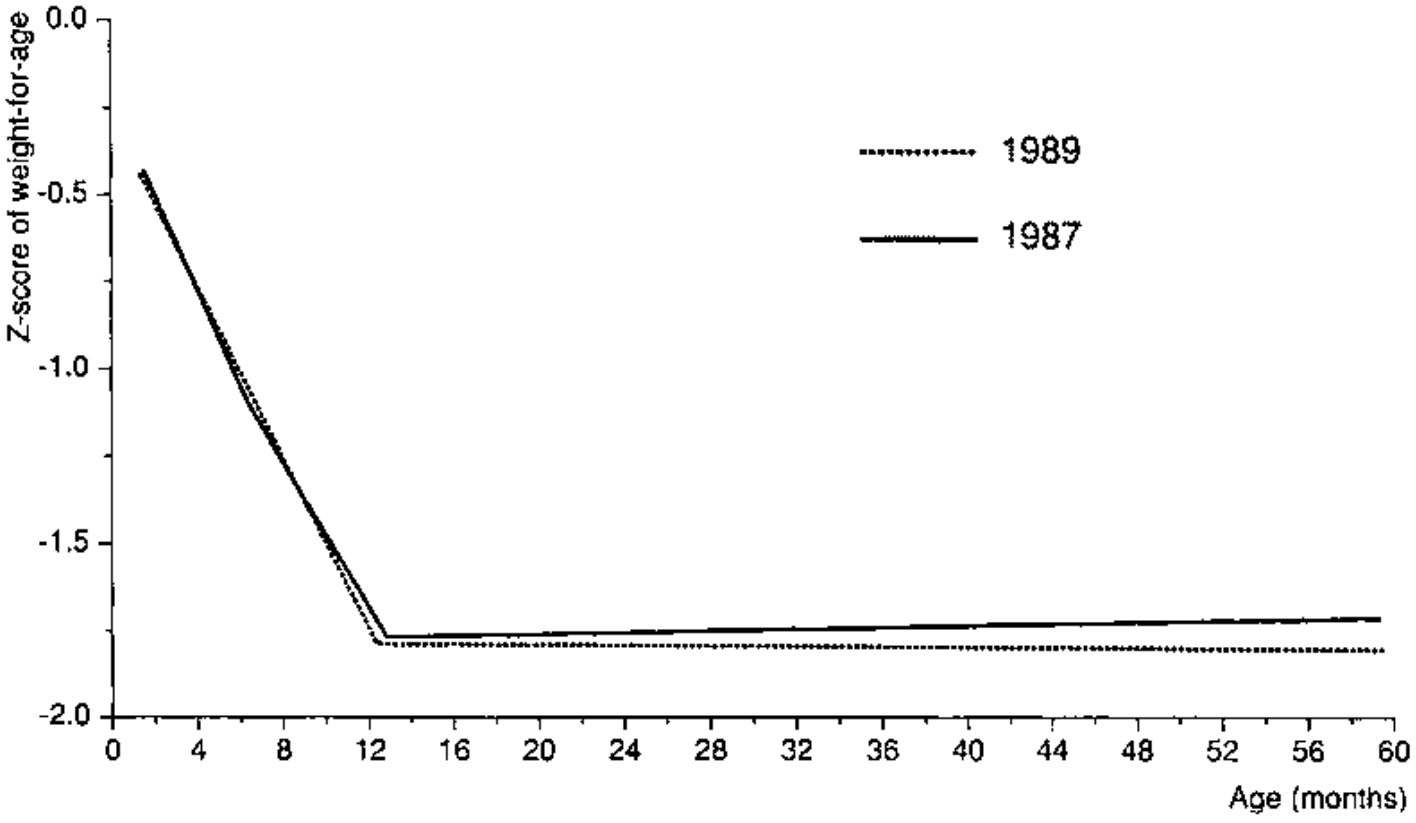


Figure 4.06.: The pattern of z–scores of weight–for–age in 1987 and 1989*)

*) SUSENAS 1987 and 1989, Jus'at, 1991

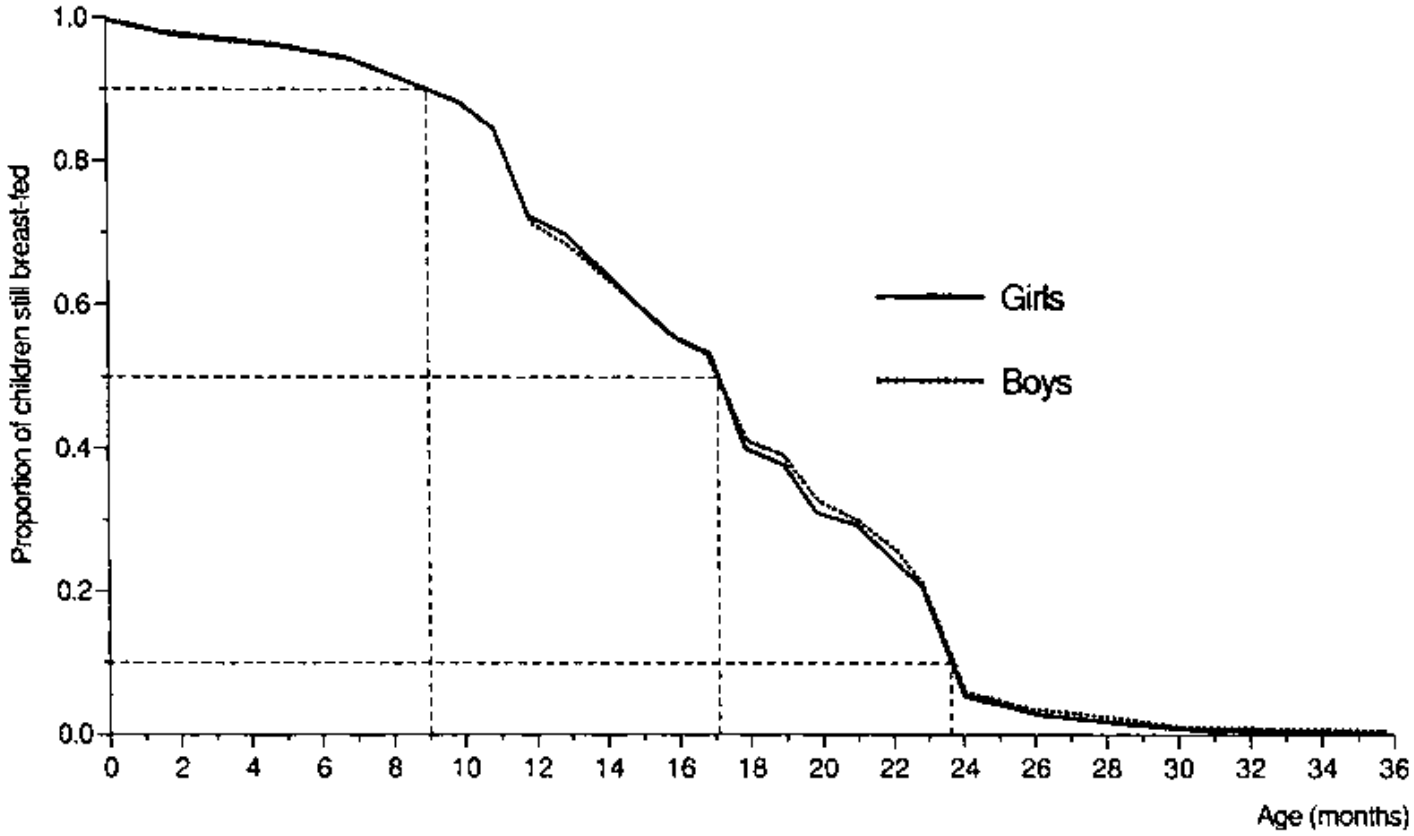


Figure 4.07.: Estimates of the proportion of children still breast–fed by gender

Source: Jus'at, 1991

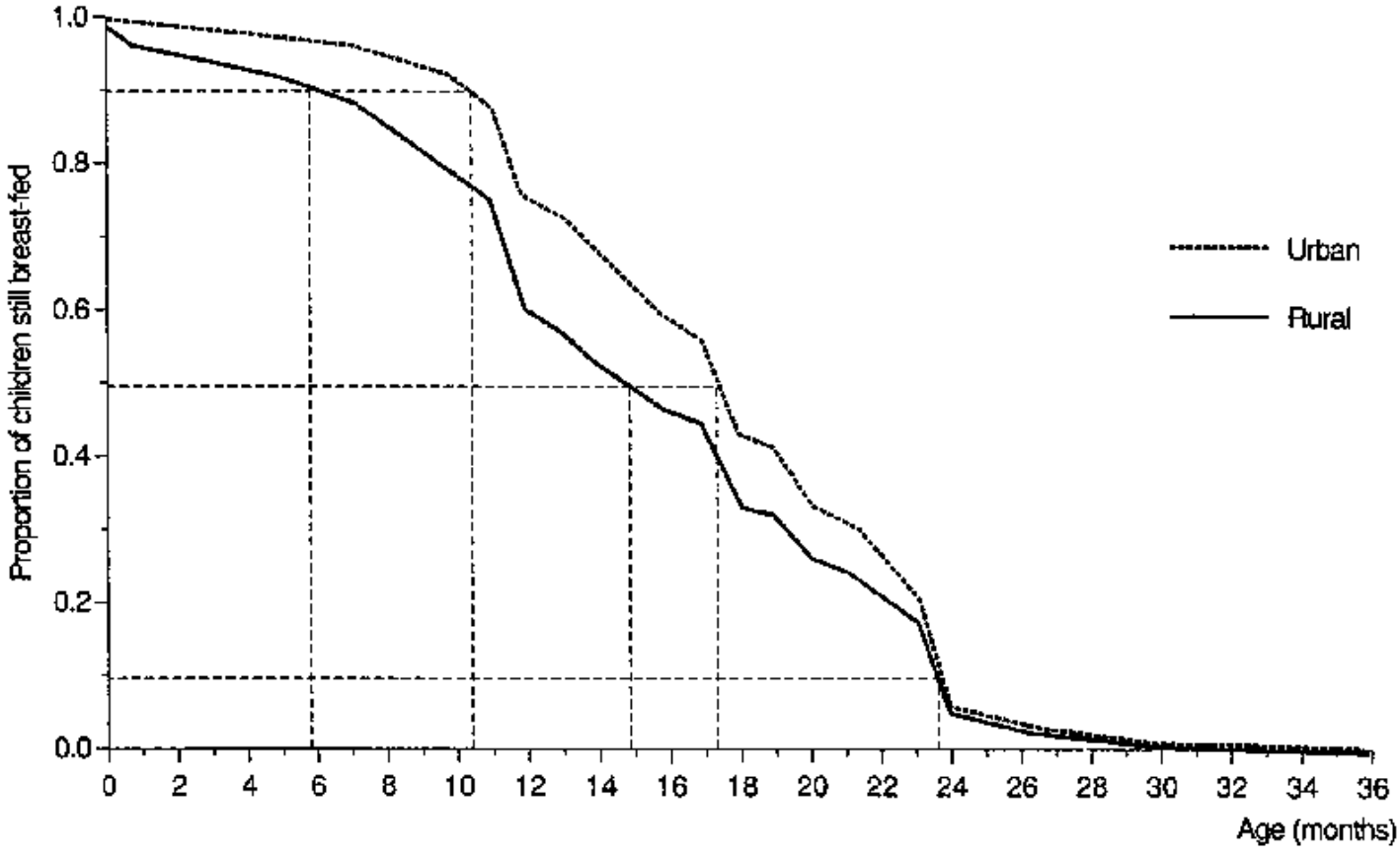


Figure 4.08.: Estimates of the proportion of children still breast–fed by rural–urban areas.

Source: Jus'at (1991)

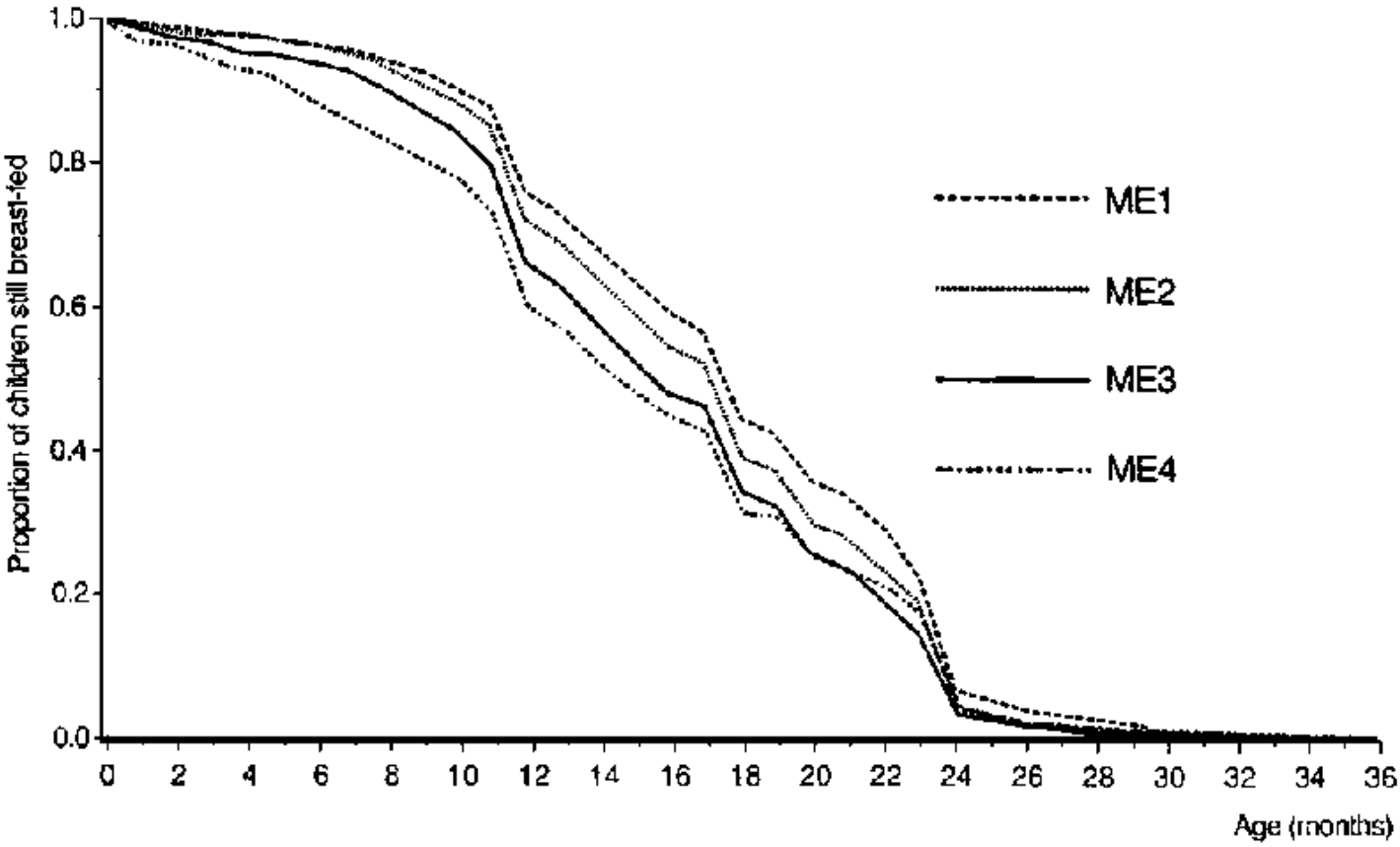


Figure 4.09.: Estimates of the proportion of children still breast–fed by maternal education.

Source: Jus'at (1991)

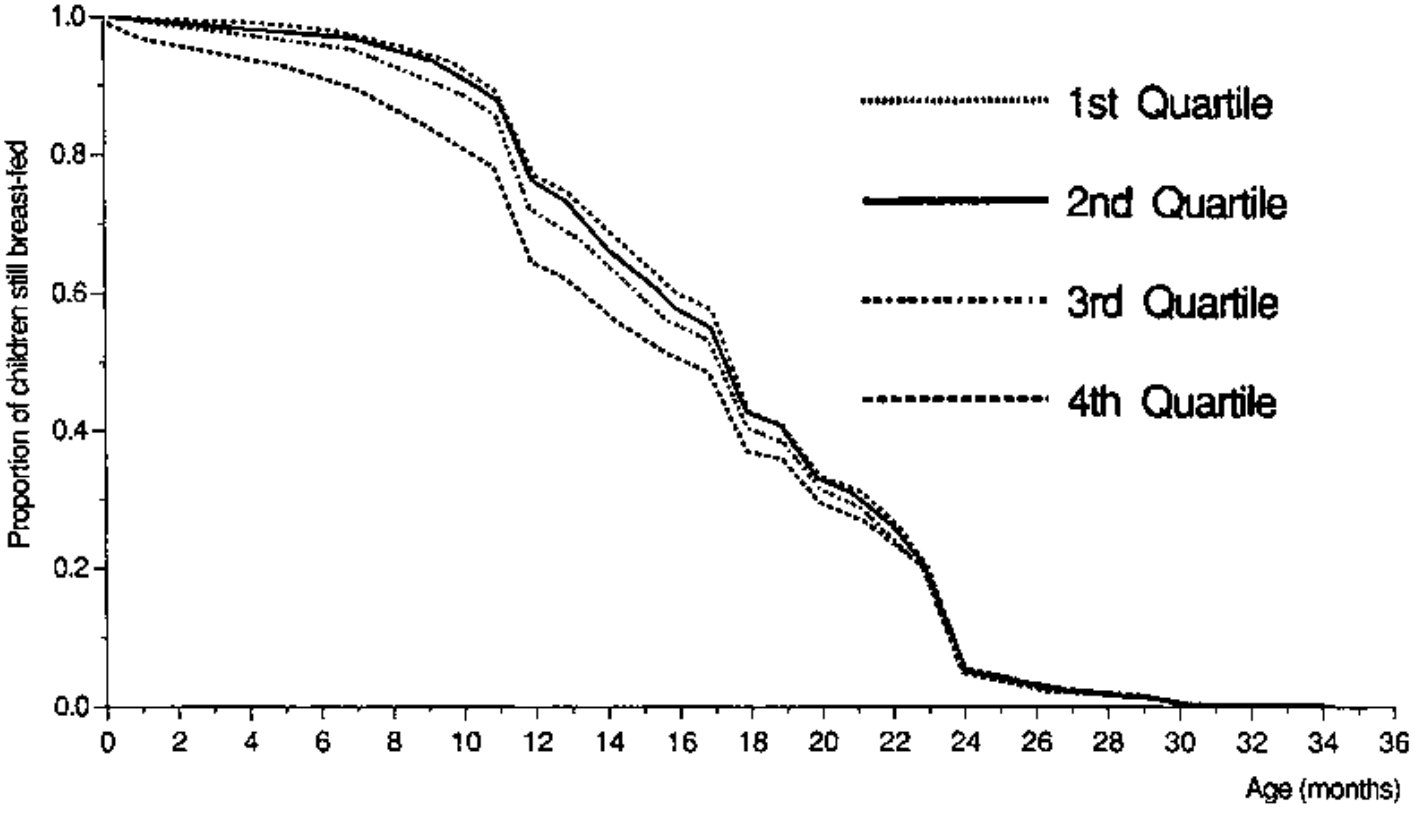


Figure 4.10.: Estimates of the proportion of children still breast–fed by quartiles of income.

Source: Jus'at (1991)

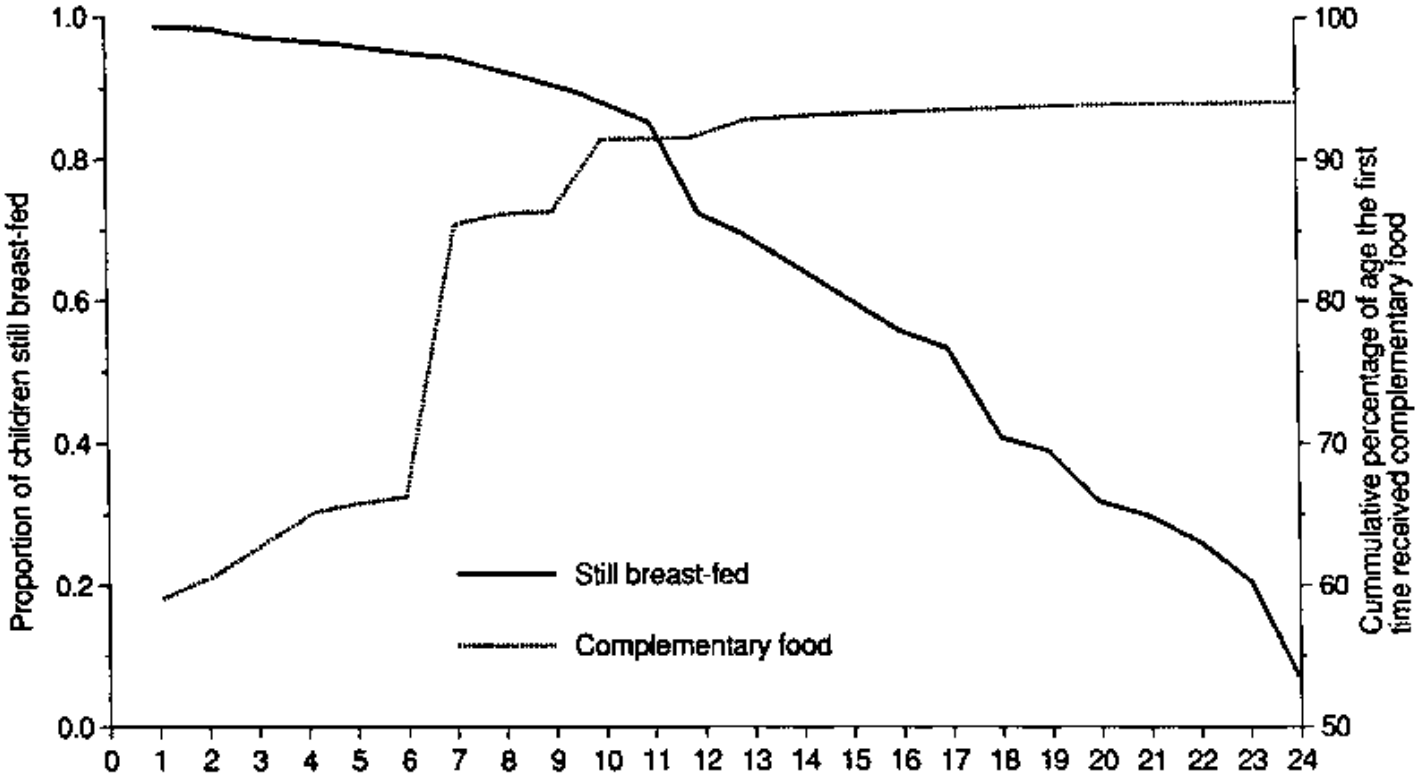
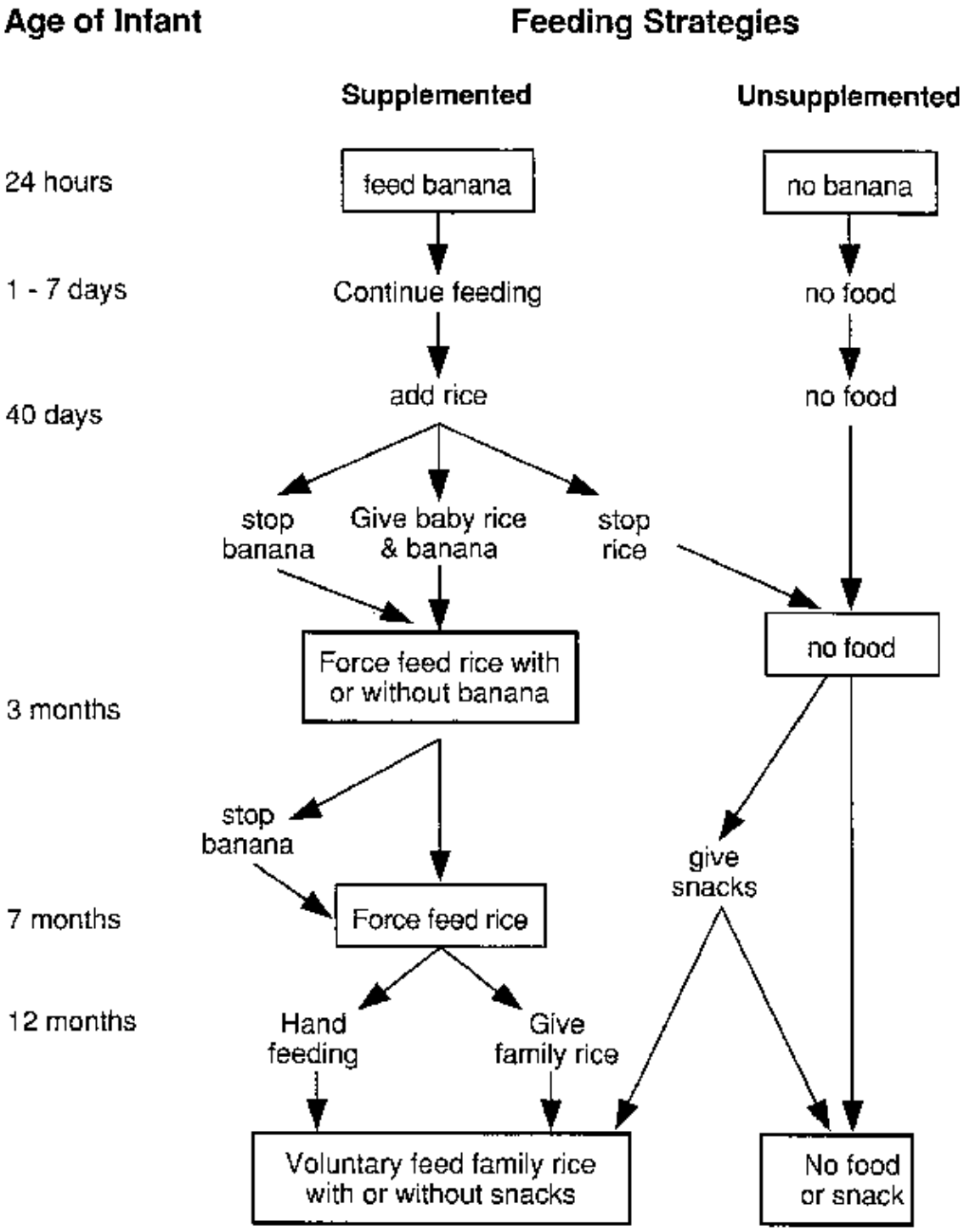


Figure 4.11.: Distribution of children still breast–fed and age at introduction of complementary food.

Source: Jus'at (1991)



Arrows show the sequence of change in feeding patterns that occurs during infancy.
Box items describe a food regime commonly given to infants at the special ages.

Chart 4.01.: Infant Feeding Strategies, Regimes and Patterns in Rural areas of Madura

Source: Launer, 1987

Chart 4.02. Feeding practices in West Nusa Tenggara and East Java

Age	Feeding practices
1st month	– Breast–feeding begins at second day of life – Prelacteal feeding for 1–3 days is very common following birth – The foods most commonly given: – honey, young coconut, mashed banana, mashed papaya, and sugar water – Some mothers give cow's milk as prelacteal food, or powder milk obtained at the

hospital; others give prechewed rice, sour chewed rice, rice flour porridge, and tea

Reasons for giving prelacteal foods: to stop from crying, not yet able to suck, needs food because breast milk is yot flowing, ritually to mark the baby's independence from the mother's womb

****** few infants are exclusively breast–fed in their first month of life *****

2 – 4 months

– Breast–feeding is continued on demand

– Complementary foods commonly given are: very soft rice porridge, prechewed rice

– Some mothers begin introducing a greater variety of foods such as bread, biscuits, steam rice cake, green leafy vegetables

– Soft and warm are the characteristics of foods given to children

5 – 8 months

– Breast–feeding continued on demand
– There are almost no children being exclusively breast–fed

"Exclusively breast–feed" when:– the child is sick, or does not want to eat, or food cause the child vomit

– prechewed rice, because the child's accustomed
– rice cakes and vegetables (carrot and glv are common)
– tahu and tempe are the main source protein
– snacking begins: krupuk and bland biscuit (roti marie)
– feed 3 times a day and relatives start taking care
– diet variety increases and food consistency thicken

9 – 18 months

– Breast–feeding is continued on demand
– powdered milk is introduced
– 50 – 70% of children are weaned (stop breast–feeding)
– children begin eating regular rice from "family pot"
– diet variety is greater in urban areas
– grated meat and chicken are given in small quantity
– snack foods: krupuk, fruit, boiled beans are given

Source: The Weaning Project, Directorate of Nutrition, 1986