

Review Article

Food and nutrition security in poverty alleviation: Concepts, strategies, and experiences at the German Agency for Technical Cooperation*

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Poverty alleviation and food and nutrition security remain one of the priority areas of development policies for the German government. Poverty exists when individuals or groups are not able to satisfy their basic needs adequately. Poverty consists of at least three dimensions: (i) the availability of essential resources for basic needs; (ii) financial and other means of poor individuals and groups; and (iii) the physical, intellectual, social, and cultural status and position of poor individuals and groups. Following this model, the severity of poverty is the collective gap between the availability of the essential resources (i) and the individual ability to meet basic needs (ii) + (iii). Basic needs are not covered if individuals or groups are not able to develop themselves physically, intellectually, and/or socially according to their genetic potentials. As a result, growth retardation of children ('stunting'), who are biologically and socially the most vulnerable individuals of the society, is a valid cultural independent indicator for poverty. One form of poverty is food and nutrition insecurity. Food security is achieved if adequate food (quantity, quality, safety, sociocultural acceptability) is available and accessible for and satisfactorily utilized by all individuals at all times to live a healthy and happy life. Food and nutrition programmes have four dimensions: (i) categorical; (ii) socio-organizational; (iii) managerial; and (iv) situation-related dimensions. As shown in three examples of Indonesian–German programmes, despite the complexity of poverty and food and nutrition security, with adequate targeting of the most vulnerable population, adequate identification of problems for a proper selection of interventions and frequent evaluation, reduction of poverty and food insecurity can be achieved.

Key words: food security, Indonesia, poverty alleviation, stunting.

Introduction

According to the World Development Report, nearly half of the world's population live on less than US\$2 a day and one-fifth on less than US\$1 a day for all their needs.¹ Despite a reduction in the absolute number of undernourished preschool children in the developing countries of Africa, Asia, and Latin America, approximately one-third of the children under 5 years of age in developing countries still suffer from growth retardation due to inadequate feeding and poor health.² As a result, despite many international efforts, poverty and undernutrition remains a global problem. Based on these conditions, poverty alleviation and food and nutrition security remain one of the priority areas of development policies for the German government.

Poverty alleviation

Internationally, the three most frequently used approaches to define poverty are related to income, basic needs, and people's perception.³ Following the basic needs approach, Donnison suggested subdividing this category into two groups:⁴ first, destitution as extreme hardship and misery that occurs in a catastrophic natural or social breakdown; and second, subsistence poverty which appears if basic needs of

individuals or groups are not met. 'Relative poverty' which may exist in an affluent but unequal society was included in the latter.

The World Bank also went beyond a pure economic definition of poverty, including additional aspects of poverty in a more comprehensive definition, to define poverty as an inability to achieve a minimum standard of living.^{5,6} For the World Bank there are two equally important aspects of living standards: income and social. Besides absolute poverty, the World Bank accepts inequity or relative poverty as a distinct problem. Theoretically, a high prevalence of absolute poverty may coexist with little inequity and vice versa.

The difficulty in agreeing on a generally valid and accepted definition lies in the complexity of the phenomenon of poverty and its perception. In the most extreme cases, it

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has been suggested that 'an objective and general valid definition of poverty must be abandoned'.⁷ The conceptual discussions of poverty will always be biased towards an action-driven definition.⁸ Although there may never be a generally accepted definition of poverty, the management of poverty alleviation requires a relevant definition with measurable indicators. For this purpose, the following definition of poverty is suggested: 'poverty exists when individuals or groups are not able to satisfy their basic needs adequately'.

It has to be recognized that this definition of poverty is formulated in objective terms only, even though the terms 'basic needs' and 'adequately' can also be related to the social dimension. Following the rationale of Donnison⁴ this definition can be categorized as subsistence poverty or, according to the World Bank, absolute poverty. This is not intended to downplay the importance of relative poverty and unequal income distribution and wealth, which need earnest political attention as well.

In line with the World Bank⁵ there are two questions that must be answered to make a poverty definition useful: (i) what is meant by a minimum standard of living or basic needs, and (ii) how would the magnitude and severity of the lack of basic needs be expressed within a single index?

The response to the first question shall be explained using the model shown in Fig. 1.⁹ It is generally perceived that basic needs are composed of food, social and cultural life, primary education, health, favourable living and environmental conditions (clothing, shelter, water, air etc.). The model makes clear that when persons or groups are 'too far' from essential resources, and the means, such as time or income, are not sufficient for an adequate access to basic needs, then poverty occurs. Individuals or households that are in advantageous biological, social and cultural positions and who possess good social relationships, knowledge, health and confidence are closer to the resources and therefore have to expend less means to satisfy their basic needs. Consequently, people in a poor position must make additional efforts to attain a minimum living standard. Each essential resource that cannot be reached by adequate means indicates poverty. The accumulated distances between the end of the arrows and the boxes express the severity of poverty.

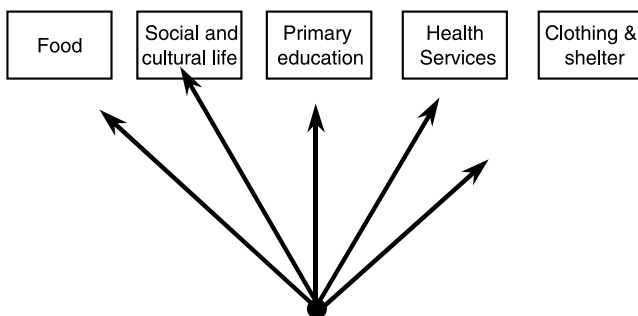


Figure 1. Poverty model. Accessibility of basic resources. (→), means, income etc.; (□), basic need resources; (●), individual or household status.

It becomes obvious from this model that poverty is not merely an economic problem. Poor people may have increased incomes at their disposal for reaching essential resources, but personal income, while necessary, is not in itself sufficient for preventing poverty. In particular for the urban poor, time is often a more limiting means in reaching essential resources than money.

It can be concluded that poverty consists of at least three dimensions: (i) the availability of essential resources for basic needs; (ii) financial and other means of poor individuals and groups; and (iii) the physical, intellectual, social, and cultural status and position of poor individuals and groups.

Following this model, the severity of poverty is the collective gap between the availability of the essential resources (i) and the individual ability to meet basic needs (ii) + (iii).

Additionally, there is a fourth underlying element that influences all three described dimensions and determines poverty: the political and cultural overall condition of a society. Ultimately, poverty is the product of the overall socioeconomic order and of the distribution of power and resources within it.⁸

The second aforementioned question recognizes that indicators hold a key position in the overall concept of poverty alleviation. They are needed to identify poor populations, measure the magnitude and severity of poverty and provide information on its specific causes, nature and effects. In addition, indicators help to identify poor individuals or groups as recipients and/or participants of intervention measures and in particular, give valid and reliable information on the success or failure of poverty alleviation efforts.

Due to its complexity it seems impossible to measure poverty directly. But there are two alternatives for an indirect measurement: either the input or causes are observed or the impact or effects. As already mentioned, traditionally, economists from the input perspective, use mainly financial indicators to measure poverty. It is assumed that by reaching a minimum amount of financial inputs, described as poverty line, then absolute poverty is erased. However, income does not fulfil the necessary requirements as an indicator. First, as already mentioned, poverty is more than simply the lack of income. Second, because many people are not able or willing to give accurate information about their income, the precision of the measurement is insufficient. Third, the economic definition of basic needs suffers in practice from arbitrary decisions, which are the basic needs of an individual or household and how much income is needed for these basic needs. As a result, the prevalence of poverty can vary substantially. For example, whereas the National Planning Commission estimated that at the end of the 1980s, 40% of the Nepalese population were poor, the World Bank calculated that 71% were living below the poverty line.¹⁰ Furthermore, even if people have an income above the poverty line, it is not known how far they are able (and willing) to use their income to overcome poverty. As a

result, an appropriate indicator needs to be independent of the arbitrary definitions of the basic needs of people and react sensitively if one of the basic needs is not fulfilled.

Another possibility for measuring the effect of poverty comes from a physiological approach and could be expressed as: 'basic needs are not covered if individuals or groups are not able to develop themselves physically, intellectually, and/or socially according to their genetic potentials'.

Anthropometric indices in growing children have been recommended repeatedly as a suitable key indicator for absolute poverty in communities.^{11–14,15,16} First, it is generally accepted that children are most vulnerable to poverty compared to the rest of the population.⁸ Second, in numerous studies it has been consistently observed that anthropometric indicators of growing children with inadequate dietary intake, who are repeatedly ill, do not reflect the attainment of their genetic potential. Because inadequate food availability, caring capacity, basic education, health systems, housing and environmental conditions have been proven as underlying causes of inadequate food intake and repeated episodes of diseases,^{17,18} anthropometric indices had been suggested as an alternative for indicating the existence of absolute poverty.

Besides these environmental factors, the growth of a child is also determined by genetic factors, although many studies have confirmed that, with the exception of genetically isolated locations, population groups of children at large have the same genetic potential for height growth. Therefore, the height-for-age index of growing preschool children (aged 0–5 years) is recommended as a key indicator for poverty in communities and populations¹³ because retarded height or 'stunting' can be attributed solely to an inadequate utilization of essential resources. Apart from their validity, anthropometric data are relatively easy to measure and are independent of statements made by the victims of poverty.¹⁹ However, it has to be noted that the height-for-age index as a key poverty indicator does not reveal the causes of poverty. Therefore, direct and indirect underlying factors such as food intake and availability, occurrence of diseases, education, caring, access to social services, expenditure of income and time must be additionally assessed and associated with the height-for-age index.²⁰

This poverty model, as described, was utilized as a framework for poverty assessment and alleviation strategies in several Indonesian projects assisted by German technical cooperation.²¹ As suggested, the magnitude and severity of poverty was measured by using growth retardation of preschool children as a collective poverty indicator. By associating this indicator with other collected socioeconomic data, the most affected population groups are identified and it is possible to select basic need-orientated poverty alleviation strategies and evaluate their impact.

Food and nutrition security

The definition of food and nutrition security has evolved considerably over time. The starting point of 'food security'

was food availability to balance unequal food distribution regionally and nationally. However, it was rapidly accepted that availability, although a necessary element, is not sufficient for food security because food may be physically existent but inaccessible for those most in need. As a result, today the following definition is internationally widely acknowledged. 'Food security is achieved, if adequate food (quantity, quality, safety, sociocultural acceptability) is available and accessible for and satisfactorily utilized by all individuals at all times to live a healthy and happy life.'

The concept of food and nutrition security has four dimensions: (i) the categorical dimension; (ii) the socio-organizational dimension; (iii) the managerial dimension; and (iv) the situation-related dimension.²²

According to the definition, the categorical dimension contains four elements: availability, accessibility, utilization and stability. Availability is achieved if sufficient food is ready to have at people's disposal. Access is ensured when all households and all individuals within those households have sufficient means and resources to obtain appropriate foods (through production, purchase or donation) for a nutritious diet. Adequate utilization refers to the skills in storing, preparing, cooking and eating at the right time an adequate diet, and the ability of the human body to ingest and metabolize food. Nutritious and safe diets, an adequate biological and social environment, and proper health care to avoid diseases ensure adequate utilization of food. In most cases, utilization is only discussed from a biological perspective. However, food also has an important social role in keeping families and communities together. In situations of food insecurity, food security can achieve its social role only when sufficient culturally adapted food is available within households and communities to meet their biological and social needs. The fourth element, stability, refers to the temporal determinant of food and nutrition security and affects all three physical elements. It is important to distinguish between chronic food and nutrition insecurity (e.g. repeated food shortages before harvest 'seasonality' or lack of caring during harvest) and transitory food and nutrition insecurity (e.g. due to natural and man-made disasters).

The second dimension refers to the socio-organizational dimension of food and nutrition security. The categorical elements of food and nutrition security are relevant to all levels of the social organizations, from the individual and the household (micro level), to the community (village, district and province) representing the meso level, to the nation, the regional, and the global level (macro level). However, the relative importance of each element of food and nutrition security changes with the level of social organization. At higher levels of social organization the overall political, economic and ecological conditions become more important.

The third dimension refers to the managerial aspect of projects and programmes in food and nutrition security. Management follows the classical cyclic learning process consisting of the following steps: assessment → analysis → planning → intervention → evaluation (or reassessment).

Bringing the three dimensions (categorical, socio-organizational, and managerial) together, different instruments and processes for assessment and implementation have to be used at different socio-organizational levels for different categorical elements of food security. For example, assessment methods for national food availability are different from those used in households. Despite these differences, all elements are interrelated vertically and horizontally by nature, cause and effect. Therefore, for example, inappropriate assessment of food availability may lead to the formulation of ineffective interventions that actually reduce access and utilization.

Finally, the situation-related status of a programme generates the fourth dimension of food and nutrition security. As effectiveness of food and nutrition security increases, the situation changes over time from an emergency to a more secure condition. In a situation of very high food and nutrition insecurity (i.e. an emergency situation), relief programmes have to provide survival aid and to distribute widely basic commodities such as food or medicine. These programmes need to react rapidly and flexibly to secure the survival of the people. Once survival of the most vulnerable is ensured, measures can be implemented to build a basis for sustainable development that relies on the capacity of the people. In this phase Integrated Food and Nutrition Security Programmes (IFNSP) are required. Self-help measures such as cash-for-work, food-for-work, tools or inputs-for-work can be used to construct basic infrastructure (drinking water supply, latrines, small irrigation channels, reforestation, health posts etc.). At this point, the people may have an adequate energy but the quality of food may still be insufficient. As a result, specific micronutrient interventions may be required. The right side of the figure reflects a much improved nutritional situation that allows the implementation of the classical instruments of technical cooperation (TC; e.g. the implementation of credit and saving programmes, training and upgrading of technical expertise, and institution building). Depending on the stage of food and nutrition security at the national level, different strategies and measures have to be implemented to improve the situation within a whole country.

Relationship between poverty alleviation and food and nutrition security programmes

As shown in Fig. 2, poverty alleviation is part of regional development. However, whereas in a given geographical development efforts are addressed to the entire population, in poverty alleviation only the poorest segment of the population is focused upon. Food and nutrition security strategies are directed to the poor whose nutritional status is most vulnerable. Food security emphasis in particular strategies related to food availability, in general, and food aid, in particular. The relationship between food security and food and nutrition security shall be shown in Fig. 3, in which a simplified causal model links nutritional status with ecological determinants at the household level. In this conceptual framework, the nutritional status is an outcome of food intake and health status. However, the underlying causes of health (environmental determinants and health services) have been depicted in different boxes due to their different natures. A reduced state of health may be due in part to tenuous access to health care, poor housing and environmental conditions, and is possibly worsened by malnutrition, which predisposes individuals to diseases. The distinction between health services and environment is necessary to select appropriate intervention strategies.

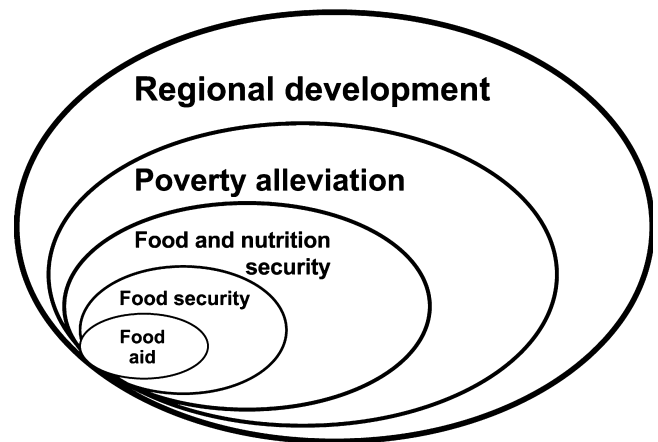


Figure 2. Action areas of different development strategies.

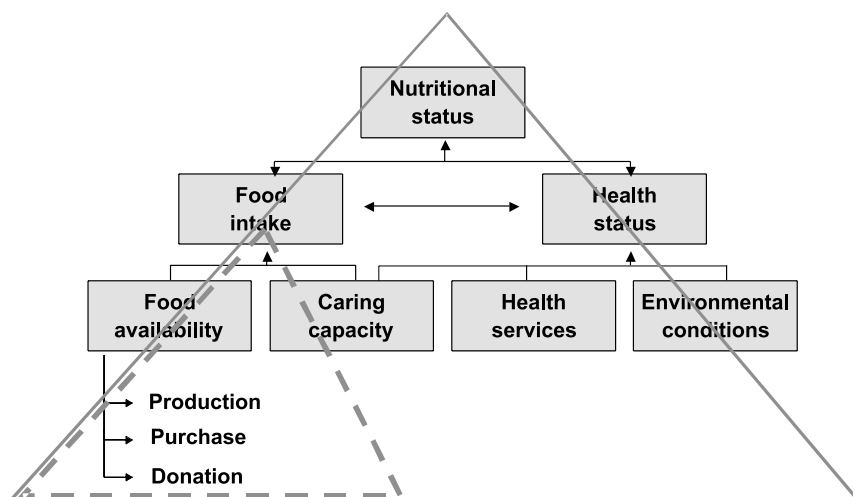


Figure 3. Simplified causal model which links nutritional status with ecological determinants at the household level.

The four underlying determinants of food intake and health status are influenced by four determinants. In addition, each determinant has several contributing factors. For example, as shown further in Fig. 3, food availability is affected by food production, purchase and/or donation. This conceptual framework emphasizes the difference between 'food security' and 'nutrition security'. The first refers to the area of causes and effects of food availability, here illustrated as the small, dotted triangle. The latter refers to the entire relationships, depicted in the large, lined triangle.

The common platform of poverty alleviation and food and nutrition security programmes lies in the similar planning requirements. Both programme types must ensure the same three requirements: (i) the most vulnerable people are addressed (adequate targeting); (ii) the selected interventions are based on the identified nutritional and poverty problems of the target group and the available resources (proper design); and (iii) the interventions can improve and secure the nutritional situation of the malnourished target group at the lowest costs (high effectiveness, high efficiency, and affordability).

Experiences in poverty alleviation and food and nutrition security

Poverty and food insecurity may force indigenous people to overburden the environmental resources and destroy their basis for survival. Therefore within the development policy of the German government, programmes are supported that reduce poverty, improve the food and nutrition security situation, and maintain the ecological environment and natural resources. In Indonesia in 1992, the Social Forestry Development Project (SFDP) in West Kalimantan, Indonesia was started. The project aimed to increase the welfare of the local population in a sustainable way and at the same time to maintain the forest resources. As shown in Fig. 3, within the same geographical environment live three different ethnicities (Dayak, Malay, and Maduranese from East Java) under very different conditions. The transmigrated Malay and Maduranese who were supported by the government lived under significantly better conditions than the non-transmigrated populations. The social inequity laid the foundation for social unrest, which the population of Kalimantan experienced in recent years.

However, the reduction of poverty and undernutrition in this difficult social environment is possible. As shown in Fig. 4, 3 years after the beginning of the social forestry project, the prevalence of stunting of the children who had been born after the start of the project was reduced significantly. The perception of the people regarding their situation confirms the improvement of living conditions. Whereas at the beginning of the project (based on poverty criteria that were identified by the local community), 76% of the households were classified as poor, after 3 years only 47% belonged to poor households. In Fig. 5 the increased purchasing power was shown by the increased ownership of radios, televisions, and bicycles. The increase of purchasing power of the households had resulted in an increased access

to food. As shown in Fig. 6, after 3 years the frequency of consumption of selected food items increased significantly compared to that at the start of the implementation of the project. Furthermore, whereas at the beginning of the project 81% of the households reported experiencing seasonal food shortages, in 1996 only 45% referred to food

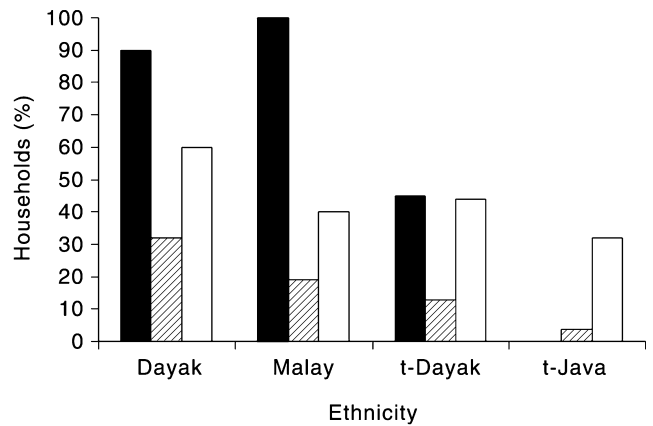


Figure 4. Stunting (%) and hygiene situation expressed as households (%) taking drinking water from the river and prevalence (%) of diarrhoea in children related to different ethnicities in West Kalimantan (1992). (■), river water; (▨), diarrhoea; (□), stunting.

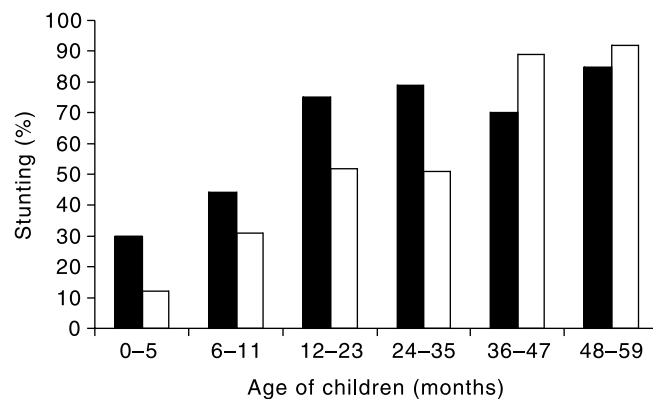


Figure 5. Changes of prevalence of stunting (%) of under-5 children in a social forestry project in West Kalimantan, Indonesia. (■), 1993; (□), 1996.

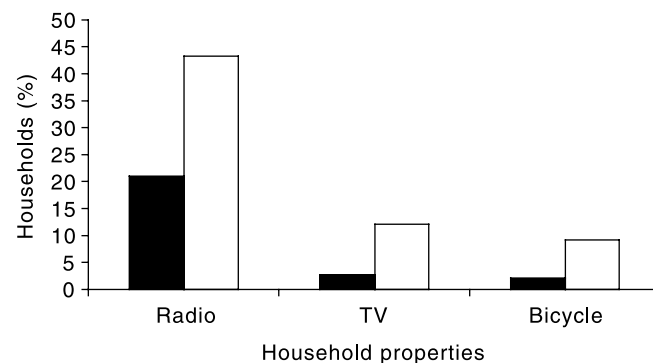


Figure 6. Changes of rate of selected household properties in a social forestry project in West Kalimantan, Indonesia. (■), 1993; (□), 1996.

supply problems. However as shown in Fig. 7, increased purchasing power led to a higher proportion of mothers introducing food other than breast milk earlier than 4 months after giving birth. Furthermore, the percentage of mothers who were able to produce an adequate supply of colostrum after birth remained low. Also the sanitation situation had not changed after 3 years. As shown in Fig. 8, practically all interviewed household members in the project area reported defecating in the river, and at the same time used the river as the only water source. Furthermore, approximately 80% of the households disposed of their garbage openly in view of other people. After 3 years the situation had not changed. As a result, diarrhoeal and parasitic diseases were widely prevalent. Increased income could not reduce the problem. Instead, by improved village infrastructure and appropriate information, basic resources such as potable water of an adequate quality will have to be brought closer to the villagers if poverty is going to be further reduced.

The described case study in which the process of reduction of poverty and undernutrition in communities has been initiated is no single case. The same progress had occurred in an integrated food and nutrition security programme

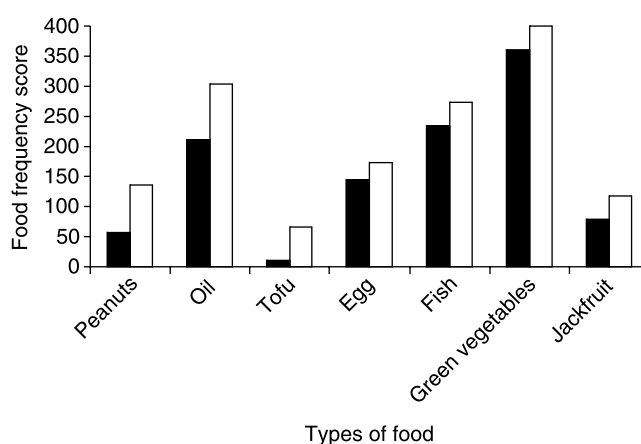


Figure 7. Changes of consumption frequency of selected food items in households of a social forestry project in West Kalimantan, Indonesia. (■), 1993; (□), 1996.

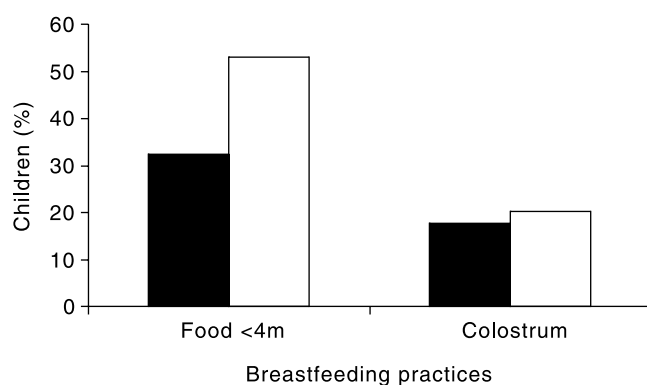


Figure 8. Changes of infant feeding practices in households of a social forestry project in West Kalimantan, Indonesia. (■), 1993; (□), 1996.

implemented in villages of a subdistrict of East Lombok. As Fig. 9 shows, again although more slowly, the positive impact of the programme can be observed in the reduced prevalence of stunting. In particular, the increased stunting differences with lower ages indicated that the longer the families were exposed to the programme inputs, the higher was the impact.

As shown in Table 1, increased income and access to social services of the households of an oil palm plantation programme (OPHIR) assisted by the German government in West Sumatra, significantly reduced poverty. Even the surrounding villages benefited from the programme. These examples show that poverty alleviation and improved food and nutrition security are possible.

In summary, poverty alleviation programmes and food security programmes have several common characteristics.

(1) Due to the complexity of the causal problem relationships, both programme types need interdisciplinary and intersectorial approaches. Poverty alleviation programmes are more than just income-generating programmes, and food and nutrition security programmes are more than food aid programmes.

(2) Small children are the most vulnerable individuals in society with regard to poverty and food and nutrition insecurity. As a result, stunting and wasting of small children are the most valid impact key indicators.

(3) Starting from a biological approach of poverty and food and nutrition security, both types of programmes require epidemiological expertise.

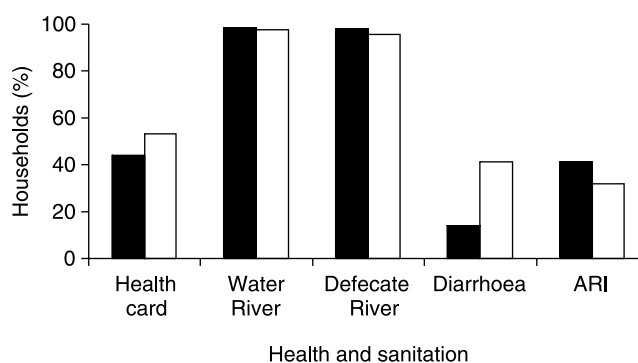


Figure 9. Changes of hygiene and sanitation practices in a food and nutrition project in Lombok, Indonesia. (■), 1990; (□), 1996.

Table 1. Prevalence of poverty (expressed as % stunted children) in the project area of OPHIR, West Sumatra, Indonesia (1994)

Villages	Stunting (%)
OPHIR	21.3
Surrounding of OPHIR	27.2
Reference villages in West Sumatra	46.3
Villages West Sumatra (1992)	44.2
Villages West Sumatra (1994)	40.8

OPHIR, West Sumatra Oil Palm Plantation Program.

(4) Poverty and undernutrition are social deformations, which have an existential dimension at an individual level. To overcome both problems, a balanced approach between community involvement and technical expertise is required.

(5) Finally, poverty alleviation and food and nutrition security need patience and time.

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