Reducing Chronic Malnutrition in Peru: A Proposed National Strategy

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Reducing Chronic Malnutrition in Peru: A Proposed National Strategy

Beatrice L. Rogers¹, Serena Rajabiun², James Levinson³, and Katherine Tucker⁴

Executive Summary

This paper proposes a national strategy to reduce the prevalence of chronic malnutrition in Peru. It is intended for senior decision-makers in the government, and researchers on food and nutrition policy, in order to, a) emphasize the importance of the problem and the feasibility of its solution, and b) suggest how resources should be allocated, and services organized, with a view to achieving the goal of reduced chronic malnutrition. It is also intended as a guide to senior program managers, to identify the essential elements of an integrated program to meet that goal.

All the elements of the proposed strategy have been suggested before, and some have even been incorporated into national planning documents. However, an integrated strategy has not until now been implemented on a national scale, whether due to lack of technical capacity, administrative constraints, or lack of political will. Compared with many other countries financial resources are not the major constraint in Peru. The government devotes significant resources to food and nutrition assistance. Yet, much of it goes to programs that are poorly designed and targeted. If redirected such resources would be sufficient to fund the proposed strategy.

The strategy addresses the need for significant institutional change, including consolidation of nutrition programs within a single administrative entity, and the decentralization of responsibility for program implementation. In addition, an integrated set of programs is proposed, addressing the range of causes of stunting, that is, growth retardation, or chronic malnutrition.

The strategy proposed here is neither a food security strategy nor a poverty alleviation strategy, although, given the regressive nature of the stunting problem effective action addressing those problems would, without question, have important positive effects on stunting. Poverty reduction alone, however, will not be sure to reach the population most vulnerable to stunting. Poverty reduction is a long-term goal, while the actions suggested here can have a significant effect on stunting within a few years. Similarly, this is not a food assistance or a food supplementation strategy. The provision of supplementary food, which has been central to Peru's nutrition programs, is ineffective in reducing chronic malnutrition without complementary services to affect behavior and increase access to food and to health, water and sanitation.

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It is anticipated that implementation of the proposed strategy could achieve at least a 30% reduction in the national prevalence of stunting before the end of the decade.

**The Problem**
Chronic malnutrition is of crisis proportions among children in Peru. One quarter (25.4%) of Peru's children under age 5 suffer from growth retardation, or stunting.

A high prevalence of stunting in the population has grave implications for the economic development of the country. Stunting in childhood reduces adults' economic productivity and earning capacity. By impairing the cognitive development of children, chronic malnutrition reduces their future productivity as adults. Stunting in childhood increases the susceptibility in adulthood to heart disease, stroke, diabetes and other chronic diseases, and possibly also to obesity. Investments in reduced stunting now will contribute to economic growth, increase the effectiveness of education, and help to control health costs in the future.

The problem of stunting in Peru is highly concentrated in the Sierra region of the country. Almost 60% of the nation's stunted children live in the Sierra; 46% in the Rural Sierra alone. The Sierra region consistently has the worst indicators for access to health, water and sanitation services, education, poverty and extreme poverty, and all indicators of dietary quality. After the Sierra, the largest proportion of stunted children (14%) reside in the Rural Selva.

**Institutional Constraints**
Peru's budget devotes more than U.S. $250 million annually to food and nutrition programs. The administration of these programs, though, is inefficient and uncoordinated. Similar programs are run by different ministries, and multiple programs exist to serve a given nutritional objective. Over half the resources spent on food and nutrition assistance are devoted to two programs, Vaso de Leche and Comedores Populares, that are not well targeted to the poor nor to the populations most vulnerable to stunting. These programs deliver food without complementary health, sanitation, or behavior change services, another reason that they are not effective means to address chronic malnutrition.

The distribution of chronic malnutrition is highly skewed toward the poor in Peru. Nevertheless, among districts with high stunting prevalence, 28% receive no nutrition services, while 47% of districts with low prevalence are served by one or more programs. Furthermore, nutrition programs are not well integrated with the health sector, and there is a need to develop a more community-based approach to the provision of nutrition and health services through decentralization of program implementation.

Recent efforts at decentralizing the implementation of health services and school feeding programs have shown promising results. These experiences suggest the importance of providing a clear mandate, legal authority, and funds to local entities, and of giving concrete performance measures to which these groups must be held.
The Strategy

The proposed strategy builds on the following principles.

• An effective strategy must address the multiple causes of stunting in an integrated way.
• The goal should be prevention of stunting, not recuperation of children already stunted.
• The strategy should be targeted to the geographic areas and the populations that account for the largest proportion of the nation's stunting problem.
• The strategy should be implemented in a decentralized manner for maximum responsiveness to local needs.
• Programs should be continuously monitored and regularly evaluated, with evaluation results incorporated into the design of future programs.

The principal programmatic interventions proposed as part of the strategy are:
• Improving household access to and use of quality health services through expansion of adequately staffed health clinics and health posts and through provision of community-based services;
• Improving household access to and use of clean water and sanitation services;
• A strong focus on improving child feeding and caring practices through behavior change communications developed through investigation of local culture and local constraints and delivered through household visits of paid, community-based health personnel (health promoters), supervised by the health centers.
• Increasing household access to adequate and high quality food through improved purchasing choices, home production, or other means.

The proposed institutional changes include
• The consolidation of nutrition programs within a single organizational entity;
• Rationalization of existing programs based on evidence of their effectiveness in reducing stunting or achieving intermediate outcomes. Elimination or redesign of ineffective programs and the strengthening and expansion of effective ones.
• Development of institutional capacity and human resources to design, implement, monitor and evaluate the effectiveness of programs and policies, and to conduct operational research on alternative program designs;
• Decentralization in the management of the programs that comprise the strategy to reduce stunting, with appropriate training and capacity building; with legal authority, and financial support; and with concrete and enforceable performance measures.

The target groups for the proposed strategy are children, aged 0-2 years; pregnant and lactating women, with special attention to adolescent mothers; household in extreme poverty and food insecurity, and, with a view to reducing stunting in future generations, adolescent girls.

The target areas that have been identified for the strategy are the Rural Sierra, where we would recommend implementing the entire strategy, and the Urban Sierra and Rural
Selva, with the understanding that the strategy to reach the Rural Selva would be based on improving outreach to rural populations by the health system based in the Urban Selva. This strategy is based on the recognition that the Rural Selva populations are too dispersed to be reached directly in a cost-effective way.

**Indicators of Success**
The main indicator of success of this proposed strategy would be a reduction in the prevalence of stunting in children aged 2-5 years, as measured in regular surveys such as ENDES and ENNIV, and the Censo de Talla of children entering school. The target population for interventions is children 0-2 years old; the effects of the strategy should be visible in this cohort as they approach school age. Progress in reducing stunting should be widely publicized, to generate public awareness and support.

**Resources**
It should be possible to cover the costs of the proposed strategy for the estimated number of target households in the target regions, within the limits of the resources currently devoted to nutrition and food assistance programs in Peru. If current food and nutrition expenditures are redirected from ineffective programs to the targeted, integrated set of interventions proposed in this document, sufficient funds will be available to achieve a significant reduction in stunting by the end of the decade.

In fact, the most serious constraint to implementing the strategy may not be financial, but human resources. Significant investment in capacity building for administration and evaluation at the central level, and for administration and management at the local level, will be essential to the success of the program.

**Commitment**
The new government has made a commitment to improving the well being of the needy and disadvantaged in Peru, and chronic malnutrition, or stunting, is a clear reflection of this well being. The actions needed to reduce stunting are clear, and the resources are available. With clear direction and strong political will, a significant reduction in the prevalence of stunting of at least 30% within the present decade is an achievable goal.
Chapter 1. Introduction

The Problem

Chronic malnutrition is of crisis proportions among children in Peru. One quarter (25.4%) of Peru's children under age 5 suffer from growth retardation, or stunting (ENDES 2000), meaning that their height for age is more than 2 standard deviations below international standards for normal growth. While an individual child may be short due to individual variation, high prevalence of stunting indicates a problem of chronic malnutrition in the population. After the age of two, it is virtually impossible for stunted children, in the Peruvian socioeconomic context, to recover fully and reach their full growth potential (APOYO 2001, WHO 1999). These children will be stunted for life.

The Problem

- Chronic malnutrition (stunting) affects more than one in four Peruvian children and four in ten rural children

- Stunting impairs cognitive development in children, reduces economic productivity of adults, and increases the likelihood of developing chronic diseases such as heart disease, stroke, and diabetes, imposing high future public health costs

- Investments in reducing rates of stunting now will have significant social and economic benefits in increasing the effectiveness of education, increasing the productivity and earning capacity of the population, and controlling health care costs in the future.

A high prevalence of stunting in the population has grave implications for the economic development of the country. Children who are stunted have lower cognitive capacity and are less able to learn and perform well in school, affecting their long-term productive capacity, and greatly reducing the effectiveness of investments in education (Matte, 2001; Grantham-McGregor et al., 1999 a,b; Pollitt, 1990, 1997). In adulthood, stunting reduces productivity and results in reduced earning capacity (Brown and Pollitt, 1996; Martorell and Arroyave, 1984). Women who are stunted are also more likely to give birth to low

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5 The currently accepted international standard for stunting is the Centers for Disease Control (CDC)/National Center for Health Statistics growth reference. It has been shown that, at least through age 5 years, these references are applicable across countries. Studies have demonstrated that children in a variety of countries and ethnic groups reach this growth potential and that differences in socio-economic status within countries are a much more important factor in determining growth than is country or ethnicity.
birth weight infants due to growth retardation in utero, which leads to an increased risk of infant mortality, disease, and, for those who survive, later growth retardation and cognitive impairment (Koblinsky, 1995, UNICEF 1998, Mora and Nestel, 2000).

Furthermore, low birth weight and stunting lead to a higher risk for chronic diseases in adulthood, including diabetes, heart disease, high blood pressure, and stroke (Barker, 1997). Obesity, an independent risk factor for chronic disease, may be related to low birth weight and child growth failure although the evidence is inconsistent (Martorell, 2001). In Peru, the prevalence of overweight and obesity is already markedly high and increasing. Approximately 50% of women in urban areas and 37% in rural areas are considered overweight or obese (ENDES, 2000). The role of childhood stunting in the causation of these problems of adulthood means that stunting has serious implications in terms of increased health costs for the treatment of chronic disease in this and future generations.

Because stunting represents the convergence of a wide range of social and economic factors, the prevalence of stunting is not only a measure chronic malnutrition. It is, in fact, a medium and longer-term measure of the effectiveness of national economic development and poverty reduction programs that seek to improve the level of living of the population.

**What this Document Is**

The present document presents a strategic approach to reducing the prevalence of stunting among Peruvian children within the next decade. Such an achievement depends on a major reallocation of current resources devoted to nutrition and food supplementation programs, the expansion and reorganization of health and sanitation services with a focus on community-based services, and the local coordination of efforts in multiple sectors, all focused on the highest priority geographic areas and populations. Most of the resources to support the proposed strategy would come from a significant reallocation of funds currently devoted to ineffective and poorly targeted food assistance programs.

All the elements in the proposed strategy have been suggested before, and have even been incorporated into sectoral planning documents (APOYO, 2001; Plan Nacional de Alimentación y Nutrición. 1998-2000, Altobelli 1999; Cuanto, 2001.) But the overall strategy has not up to now been implemented on a national scale, due to a combination of lack of technical capacity, administrative constraints, and political will. It is hoped that this document will provide a guide, a "road map" so to speak, for policy makers and program designers who are committed to achieving a significant, sustainable reduction in the prevalence of stunting, and improvements in growth and development, among children in Peru.

The present work builds on a comprehensive review of the current situation regarding childhood stunting that was prepared by the research firm APOYO, based on available information from a variety of sources (APOYO, 2001). That review contains detailed
information about the distribution of stunting in Peru and about the association of stunting with a variety of its causes and consequences. We will not repeat their analysis here, but we have drawn heavily on their valuable contribution. This document was developed after discussion with and input from professionals working in health, nutrition, poverty reduction, and economic development in Peru, drawn from government agencies, Peruvian universities, non-governmental organizations, research and policy institutes, and donor organizations. A list of participants in these discussions appears as Appendix 2.

**What this Document is Not**

The strategy to reduce stunting is *not* a strategy to enhance household food security, and it is *not* a strategy to combat poverty. Both poverty and food security are closely linked to childhood stunting, and addressing both poverty and food security is important to achieving sustainable improvements in stunting. But a strategy focused on childhood stunting must look beyond poverty and food security as determinants of access to food. It must address the social and cultural factors and poor knowledge base underlying caring practices and childhood feeding behaviors, and it must address the availability of health care and of water and sanitation services that are critical to achieving optimal growth and development in children. Poverty reduction and an increase in household food security are not sufficient to address the high prevalence of stunting in the most vulnerable populations.

This strategy does not pretend to be able to address the national problem of poverty. The strategy is based on the recognition that a targeted approach to changing behavior and improving access to health, water and sanitation services, along with community-based approaches to increasing household access to food, can achieve significant improvements in child growth and development. Coordination with national efforts to address poverty and food security should be promoted and would, indeed, enhance the effectiveness of the strategy. But the proposed strategy can have a significant impact on stunting through targeted interventions without waiting for economic development and poverty alleviation to resolve the problem. These interventions can prevent the developmental damage of stunting and themselves contribute to economic productivity of poor households.

The strategy to reduce stunting is *not* a plan for the targeted provision of food assistance. The provision of food supplements has been the backbone of nutrition interventions in Peru, accounting for the majority of funding for nutrition programs while failing to reach the appropriate target groups. But food assistance by itself will not and cannot achieve sustainable reductions in stunting. Effective, sustainable improvements in stunting prevalence require a coordinated strategy that may involve the judicious use of food supplements for very poor households, but that must address the causes of stunting in behavior, access to services, and assured household food supply.

Finally, the strategy is *not* one of nutritional rehabilitation. Rehabilitation of acutely malnourished children and of children who are failing to grow adequately (in weight or

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height) is an important health-related activity. But achieving sustained, significant reduction in the prevalence of stunting requires a strategy based in prevention rather than cure. The process of becoming stunted, and the developmental damage that results from the process, starts early in life, even before birth. When a child is sufficiently malnourished that he begins to fall off the growth pathway, developmental damage has already been sustained. Waiting until a child demonstrates growth failure before acting to reverse this trend means that much of the benefit of reducing stunting will be lost.

To Whom the Document is Directed

The intent of this document is to provide the general lines of a national strategy to reduce chronic malnutrition. It is aimed at two audiences. First, we hope that senior decision-makers in the government, those with the authority to set priorities and allocate resources, will be persuaded that the goal of reducing stunting is worth significant investment, and that the accomplishment of this goal is possible and realistic. The document provides guidance as to how resources should be allocated, and programs organized within the government, in achieving this goal. Second, the document offers senior program managers, whether in government, donor agencies, or NGOs, a description of the essential programmatic elements that make up the strategy, as an aid to effective planning. The document does not pretend to offer a fully realized set of program descriptions, but it contains enough detail to guide the development of such programs.

The Goal

The goal of the strategy to reduce stunting is, ultimately, to assure the optimal growth and development of all Peru's children. Success will be measured by the reduction in the number and proportion of children falling below -2 SD of height for age, but also, in the long run, by achieving for Peru a distribution of children's growth that approaches international standards. The strategy focuses on children under age two, but impact will be measured in children aged two to five, the age at which improvements should be apparent.

We believe that a significant reduction in childhood stunting of at least 30% can be achieved by the year 2010, implying a reduction in the overall prevalence of stunting from about 25% to 17.5%. This could be achieved by reallocating resources currently devoted to ineffective food supplementation programs, and using those resources to implement a targeted, community based strategy that addresses the constraints to child growth. These are lack of access to health, water and sanitation services, inadequate child and maternal caring practices, and lack of availability and consumption of sufficient, high quality food.

In the following two sections, we briefly review the situation of stunting in Peru, and the institutional responses to it, in order to make the case for the proposed strategy.
Chapter 2: Stunting Among Children in Peru

Stunting is the common measure of chronic malnutrition, but stunting is a result of more than insufficient food consumption. Children become stunted as a result of inadequate diet, of course, but also due to diseases such as diarrhea and acute respiratory infection and to parasitic infestation that deplete vital nutrients including iron and zinc, known to be deficient in Peruvian diets. Childhood stunting can start before birth. Children whose mothers are malnourished, and those who have an excessive burden of physical work during pregnancy, are more likely to be born with low birth weight, and these infants are far more likely to suffer childhood growth retardation. (Nyambose, 2001). These conditions that give rise to stunting --- low birth weight, insufficient food consumption, and a high burden of disease --- have their origins in low access to health services and to water and sanitation services, inadequate access to food, and poor maternal and child caring practices related to self-care of women and to the feeding and care of children. A strategy to combat the high prevalence of childhood stunting must address these strategic points of intervention.

A recent analysis of data from 20 countries found Peru had the most regressive distribution of stunting in all countries studied.

Peru not only has a high prevalence of childhood stunting; the distribution of stunting in the population is extremely regressive, concentrated in the lowest income groups. A recent analysis of data from 20 countries found Peru had the most regressive distribution of stunting of all the countries studied (Wagstaff and Watanabe, 2001), while the distribution of public health and other social services tends to favor those of higher income (APOYO 2001).

2.1 Stunting and Poverty

The goal of the proposed strategy is to alleviate chronic malnutrition in Peru. Chronic malnutrition is a misleading term, though, since it implies that the problem is related primarily to inadequate food consumption. In fact, stunting is the measure of chronic malnutrition, and stunting arises from a variety of causes.

Childhood stunting in Peru is strongly associated with poverty. Among the extreme poor, 35% of children under age five are stunted, compared with 24% of the non-extreme poor, and only 13% of the non-poor (Figure 1 ENNIV, 2000). These figures suggest both the importance of poverty and the fact that poverty is not the unique explanation for stunting.
In the first half of the decade of the 90s, Peru experienced a period of rapid economic growth that resulted in a reduction in the rates of poverty and extreme poverty, and a parallel reduction in the prevalence of stunting in children under age 5 (see Figure 2). Since 1998, the decline in the rate of extreme poverty stopped, and so did the decline in stunting prevalence.
But poverty decline is not the whole story. During those years, the largest decline in stunting was among the non-poor (a decline of 38%, from 18 to 13%), while stunting among the extreme poor fell by 24%, from 46 to 37% (ENNIV 1994, 1997, 2000). Furthermore, the decline in stunting was distributed extremely unevenly in geographic terms. Figure 3 shows the prevalence rates of chronic malnutrition in children under 5 years by region. Lima, with the lowest prevalence of stunting, experienced almost a 70% decline in stunting, while the areas of highest prevalence, the Rural and Urban Sierra, experienced the smallest declines (20% and 11% respectively). Between 1997 and 2000, the prevalence of stunting in fact increased significantly in the Urban Sierra (from 14% to 24.3%), possibly reflecting migration of poor households from the rural to the urban areas in response to the economic downturn.

These uneven improvements in stunting prevalence demonstrate that reducing poverty is not the same as reducing stunting. Furthermore, households whose members are stunted face serious barriers to improving their economic situation. Stunting significantly reduces productivity and earning capacity among household members of working age. Also, stunting is associated with high rates of diarrhea and infectious disease, which cause lost productivity and increased expenditures of time and money for medical care.

Stunting is more prevalent in rural than in urban areas. In every region of the country, rural areas have higher rates of stunting than urban ones, though the prevalence in Urban Sierra is higher than that in the rural Coast.
Table 1: Prevalence of Stunting, by region 1994-2000

<table>
<thead>
<tr>
<th>Area</th>
<th>1994</th>
<th>1997</th>
<th>2000</th>
<th>% population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lima Metropolitan</td>
<td>13</td>
<td>9</td>
<td>7.7</td>
<td>30</td>
</tr>
<tr>
<td>Costa Urbana</td>
<td>11</td>
<td>10</td>
<td>11.6</td>
<td>18</td>
</tr>
<tr>
<td>Costa Rural</td>
<td>31</td>
<td>20</td>
<td>23.2</td>
<td>5</td>
</tr>
<tr>
<td>Sierra Urbana</td>
<td>27</td>
<td>14</td>
<td>24.3</td>
<td>13</td>
</tr>
<tr>
<td>Sierra Rural</td>
<td>48</td>
<td>46</td>
<td>40.0</td>
<td>22</td>
</tr>
<tr>
<td>Selva Urbana</td>
<td>27</td>
<td>24</td>
<td>20.5</td>
<td>6</td>
</tr>
<tr>
<td>Selva Rural</td>
<td>44</td>
<td>35</td>
<td>32.4</td>
<td>7</td>
</tr>
</tbody>
</table>

(ENNIV2000, APOYO 2001)

The message of these figures is clear: in a strategy to reduce chronic malnutrition, overall economic growth, even overall poverty reduction, will not be sure to reach the most high risk and vulnerable populations. A targeted strategy is needed.

Poverty is not the only explanation for stunting in Peru. In a strategy to reduce chronic malnutrition, economic growth, even poverty reduction, will not be sure to reduce stunting in the most high risk and vulnerable populations. A targeted strategy to address the range of causes of stunting is needed.

Childhood stunting shows strong associations with other key factors. Mothers' education is a strong predictor of stunting. Figure 4 shows the prevalence of stunting in children under 5 years by mother’s education. Over half of children whose mothers have no education are stunted, compared to 15% of those with secondary, and 7% of those with superior level education (ENDES, 2000). Mothers education is linked to demographic characteristics associated with stunting: less educated mothers start childbearing earlier and have more children, more closely spaced in time, all factors associated with low birth weight and subsequent stunting in Peru (ENDES, 2000). While 90% of children now attend school in Peru, girls in rural areas have on average only three years of schooling, starting at age nine and ending by age 12. The quality of education is also a serious problem that is receiving attention at present.

Figure 4: Prevalence of chronic malnutrition by mother's education level
As mentioned above, despite significant progress in the early years of the decade, with stunting prevalence falling from 37% to 25.8% in children under 5, since 1996 the prevalence of stunting has remained virtually unchanged, decreasing only from 25.8% to 25.4% (ENDES, 1996, 2000).

The current prevalence of chronic malnutrition is distributed quite unevenly: 40% of children living in rural areas are chronically malnourished compared to 13% of children living in urban areas. Among the regions, the Rural Sierra has the highest prevalence of chronic malnutrition at 40%, while Lima has the lowest at 7.7%. According to the most recent data (ENNIV, 2000), well over half the stunted children under the age 5 years in Peru are located in the Sierra region, with 46% in the Rural Sierra, and 12% in the Urban Sierra. Figure 5 indicates the percentage of the country’s total number of stunted children located in each region.

![Fig 5: Percentage of Total Stunting in Children <5 years in Peru, as Distributed across Regions](image)

The fact that over half of the stunted population lives in the Sierra region, urban and rural, suggests that a strategy to improve child growth must be a priority in this region. As we shall discuss in more detail below, the focus for interventions in the Sierra region

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Education of girls can reduce stunting by delaying the onset of childbearing, increasing the period between births, and reducing total fertility. While 90% of children in Peru attend school, girls in rural areas have on average only three years of schooling, starting at age nine and ending by age 12.
would include improved quality and quantity of food consumption, and improved access to health, water and sanitation services, and improved maternal and child feeding and care practices.

2.3 Causes of Childhood Stunting in Peru

Figure 6 shows in schematic form the causal pathways for stunting. This figure identifies the immediate causes of stunting at the individual level: a high burden of disease, inadequate food consumption, and low birth weight. The figure shows the strategic points of intervention at the household and community levels, where public policies and programs can be implemented to affect the problem.

2.3.1 High Burden of Disease Due to Low Access to Services and Poor Health and Hygiene Practices

The prevalence of diarrheal disease among children under 5, reported by mothers in a two-week recall, was 14% of urban children and 18% of rural children. (ENDES, 2000) These figures suggest that children are suffering multiple episodes of diarrhea in the course of a year, making recovery of their growth trajectory even more difficult.\(^7\) Children ages 6-11 months and 12-23 months were reported to have the highest rates of diarrhea, 23% and 26% respectively. (ENDES 2000). About 20% of children under 5 were reported to have acute respiratory infections (IRA) in the past two weeks, and almost 26% suffered from fevers. As with diarrhea, the prevalence of IRA peaks in the age groups 6-11 months and 12-23 months (24% and 23% respectively), as does the prevalence of fevers (32% in both age groups). These are precisely the age groups in which prevalence of stunting increases sharply.

These high rates of disease can be linked to three main factors: low access to clean water and sanitation services, inadequate hygiene practices, and low access to and use of health care in the household. Almost 90% of urban households have access to public water and to sanitation services, but less than half of rural households do (ENDES 2000). In the Rural Sierra, almost half of households have neither water nor sanitation services (ENNIV 2000). This in itself contributes to high rates of disease, but poor hygiene practices make the problem worse. A recent study in several rural areas of Peru found 85 to 100% reporting inadequate hygiene (CARE, 2000a).

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\(^7\) Some studies have shown that if children suffering from diarrhea are given ample additional food, they may recover and show no long-term effects on their growth. (Lutter, 1989) In the Peruvian context, though, children at risk of stunting often live in households with barely adequate food supplies, and children suffer from repeated episodes of acute diarrhea throughout childhood. Furthermore, appetite is suppressed during illness. Therefore, a strategy of relying on additional feeding during disease episodes is likely to be less effective in reducing stunting than one of preventing disease.
FIG. 6: CONCEPTUAL MODEL FOR STUNTING IN PERU

STUNTING

Child

Inadequate food intake
- Poor quality
- Inadequate quantity
- Short exclusive breastfeeding duration
- Inadequate complementary feeding

Low birth weight
- Poor maternal nutrition and health

Poor health status
- Diarrheal disease
- Acute respiratory infections
- Inadequate immunizations

Household

Inadequate food quantity and quality
- Insufficient purchasing power
- Inadequate production
- Inadequate access

Low household resources
- Income and production

Family size and structure
- Age at first childbirth
- Birth spacing
- Total family size

Inadequate practices
- Infant and child feeding
- Hygiene
- Self-care in pregnancy

Inadequate healthcare
- Immunization
- Growth monitoring
- Pre-natal care

Inadequate services
- Clean water
- Sanitation facilities

Community

Economic social infrastructure
- Road access
- Income generation opportunities
- Markets
- Variety of foods

Educational services
- Accessible schools
- Quality education

Health services
- Accessible health centers
- Quality health care
- Medical supplies

Water and sanitation services
- Accessible clean water
- Sanitation services
Among rural households, 60% report problems reaching health services due to distance, while this figure is 22% for urban areas (ENDES 2000). In rural areas, 30% of women said that they didn't know where to go for health services; this figure was 14.5% in urban areas. Distance and knowledge of where to go were reported as problems most frequently in the Sierra region, with 48% reporting distance as a problem, and 28% reporting lack of knowledge of where to go. Cost of care is also a barrier to households seeking health care (Vasquez et al., 2000). Low coverage of maternal and child health services is a serious problem, especially in rural areas of Peru (APOYO 2001, Vasquez, et al. 2000). This low coverage limits access to preventive services such as immunizations, curative services in the case of infection or parasitic infestation, and prenatal and postpartum care, including delivery of micronutrient supplements, supplementary food if needed, and health and nutrition education to improve caring practices. For example, only 9% of rural children in 2000 were born to mothers who had received iron supplementation; only 13% received postpartum vitamin A. (The figures for urban areas were also low, at 23% and 13% respectively). These figures suggest serious problems of access to health care that could be improved with greater outreach by the health system into the community.

The quality of available health care is also a problem. Health services tend to take a curative rather than a preventive approach, because of the training of health personnel and the norms and guidelines under which they operate. Health providers may not speak the same language as their clients, which creates a barrier in interpersonal communication and creates in the client a fear of poor treatment. Lack of resources limits outreach into communities as well as supplies of medicines, including micronutrient supplements.

2.3.2 Inadequate Food Intake

**Deficient Consumption of Calories and of Animal Foods**

Low consumption of animal foods contributes to micronutrient deficiencies, specifically iron and zinc, which are important for child growth and development. The Peruvian diet especially in rural areas consists of primarily plant sources which do not supply sufficient micronutrients or protein.

Dietary patterns in Peru are characterized by inadequate consumption of calories, and, notably, by deficient consumption of high quality foods of animal origin. Animal foods (meat, poultry, fish, eggs, and dairy products) are important sources of high quality protein as well as sources of micronutrients (iron, zinc, vitamin B-12) important for growth.

A national study of households conducted between 1990 and 1995 found high rates of energy deficiency in children ages 12-35 months; the highest rates, between 60 and 85%, were found in the Sierra and Selva regions. Deficient consumption of protein was highest in the Sierra and Selva, ranging from about 38% to 57% of children in the Sierra, and
reaching 64% in one area of the Selva. Low consumption of high quality protein (that is, protein from animal sources) was consistently high in the Sierra, ranging from over 70% to over 90% of children. These deficiencies of consumption were not restricted to children; deficiency of energy was seen in 20 to 60% of households with small children, and deficiency of protein in 30 to 60%. Most striking, over 90% of households in all regions reported deficient consumption of high quality protein; in the Sierra and Selva, these percentages were close to 100% (Prisma, 1997).

A more recent study conducted by the Instituto Nacional de Salud (INS 2001) found a high prevalence of deficient consumption of both calories and protein in children under five years; where deficiency was defined as consuming less that 70% of need, deficient energy was observed in 70% of children in the Urban Sierra, and 77% in the Rural Sierra. Deficient consumption of protein was observed in 61% of children in the Rural Sierra, and 50% of children in the Urban Sierra. Among women of childbearing age, similarly high rates of calorie and protein deficiency were observed: 54% of women in the Rural Sierra were found deficient in calories, and 45 - 50% deficient in protein (INS 2001). The low consumption of animal foods is reflected in the extremely high prevalence of anemia among women and children in Peru. About half of all children under five have anemia, and the rates for women of childbearing age are 29% (urban) and 37% (rural) (ENDES 2000). Not surprisingly, these rates are highest in the Sierra region, but in fact the rates are strikingly high throughout the country. These high rates of anemia strongly reflect inadequate consumption of foods of animal origin, and undoubtedly indicate deficiency in other micronutrients carried in the same foods, particularly zinc and vitamin B-12.

This strikingly low consumption of foods of animal origin is distinctive to Peru. The fact that this low consumption is virtually universal suggests that there may be problems not only of market availability and access through purchasing power, but also of dietary habits and preferences that could be changed by behavior change communication strategies.

**Inadequate Feeding and Care Practices**

Cultural barriers and lack of knowledge are another cause of poor diet. Where high quality foods are available, people may choose to sell rather than consume these foods, and often do not provide them to small children (Villasante 1997). Most mothers of children ages 6-9 months reported giving cereal gruels, potatoes and other low-nutrient...
density foods to their children, limiting their intakes of nutrients from animal sources (ENDES 2000).

Caretaker practices related to the feeding and care of children are also an important factor in stunting. Improved caring practices have been identified as a key goal of Peru's health and nutrition programs (Comision Multisectorial de Alimentación y Nutrición (CMAN) 2001). Inappropriate caring practices contribute to stunting even in households in which adequate purchasing power and adequate food are available.

Specific caring practices undoubtedly vary by region and locality, but several areas for intervention have been identified in previous studies (Caulfield et al. 1999; Creed, 1999). Exclusive breastfeeding and appropriate complementary feeding are two practices critical for prevention of stunting in children. Exclusive breastfeeding rates in Peru for children 0-6 months (67.2%) are among the highest in Latin America (ENDES, 2000, Carrasco and Vega-Sanchez, 2001; Altobelli 2001 personal communication), a tribute to the effectiveness of programs to improve awareness and the training of health personnel in the promotion of exclusive breastfeeding in the last decade. However, non-breast milk liquids are still being introduced as early as in the first week of life (Prisma 1997), and continued efforts to prevent this practice are important. When complementary foods are introduced, they are of poor nutrient quality and often given too infrequently to the child. In addition, cultural feeding practices such as passive feeding (leaving a small child to eat by himself rather than actively feeding him) may also contribute to inadequate food consumption of small children (Engle, 1999).

2.3.3. Low Birth Weight due to Poor Maternal Nutrition

Low birth weight figures reported in national surveys are not particularly high in Peru. The most recent ENDES reports figures in the range of 5-6%, comparing favorably with rates in other countries (ENDES 2000). However, these figures may be underestimated. In the Sierra and Selva, over 40% of births did not report birth weight, and one might expect that these births, presumably not attended by a medically trained attendant, would be at higher risk of low birth weight. In an earlier survey (ENDES 1996), mothers were asked if they perceived that their newborns were either "very small" or "smaller than average," and according to these perceptions, rates of "small" babies ranged from 18% in Lima to 24% in the Sierra and the Selva. Mothers' perceptions of their children's size at birth have been found to be a valid indicator of birth weight, particularly in areas where a significant number of births take place outside the formal health system (Moreno 1990). This evidence suggests that low birth weight may be a significant contributor to the problem of stunting in Peru.

Low birth weight is associated with poor nutritional status of women due to low food intake and poor self care practices. Women need rest during pregnancy. A heavy workload burden results in high rates of energy expenditure in pregnant women, which has been associated with low birth weights. Women, particularly in rural areas, may be inclined to work during the entire pregnancy and through the postpartum period with little time off to rest out of a desire to maintain the integrity of the household. (Altobelli
and Léon, 1997) Low birth weight is associated with early childbearing. In Peru, over 22% of women in their teens already have children; almost 4% of 19-year-olds already have two or more children. (ENDES, 2000). Children of teen-aged mothers are more likely to be of low birth weight.

2.4 Strategic Points of Intervention

Given these causal factors, what are the points, particularly in the short and medium term, at which public policies can be brought to bear on the problem of stunting? They are listed in the box below.

**Strategic Points of Intervention to Reduce Stunting**

- Expanded coverage and delivery of quality services by the health care system, including better outreach to the community level is one point of intervention. The health system could be used to deliver preventive and curative care, prenatal care including targeted micronutrient and food supplements.

- Greater emphasis and support are needed for behavior change communications (BCC) interventions designed to address locally relevant child-care, maternal care, and hygiene practices.

- Expanded availability of clean water and sewage disposal systems is another point of intervention. Provision of water and sanitation services, linked to systems for maintenance and education about appropriate use, is an appropriate area for public policy.

- Public sector programs can also provide assistance to households in making better use of their own resources to improve their access to an adequate and high quality diet through better purchase decisions, improved home production of food, or increased purchasing power.

National initiatives to expand access and improve quality of education are relevant to addressing stunting in the medium and long term. In addition, national strategies to improve household food security and to reduce poverty, including strategies that work to improve national infrastructure for market functioning and market access, can also contribute significantly to a strategy to reduce stunting. The elements of these strategic interventions will be treated in Chapter 4, but first we review the constraints and opportunities to address the factors associated with stunting.
Chapter 3. Institutional Constraints and Opportunities for Nutrition and Food Supplementation Programs in Peru

This chapter discusses some of the barriers to reducing stunting in Peru inherent in the current institutional structure, and identifies opportunities for improvement in the delivery of services, based on recent program experience.

The Peruvian population receives services from a wide range of nutrition programs involving significant government expenditure, but many of these programs are poorly designed, inappropriately targeted, and not coordinated with each other, nor with essential complementary services. Furthermore, the administration of these programs is duplicative, with several different Ministries or agencies responsible for operating similar programs. This contributes to the lack of coordination, resulting in some areas with multiple programs, and other areas with none. This overlap among programs multiplies administrative costs and represents a waste of financial and human resources.

3.1 Major Food Assistance Programs Lack Clear Nutritional and Health Objectives and Fail To Reach The Most Vulnerable

The Government of Peru currently spends about U.S. $250 million annually on programs to provide food assistance to vulnerable populations. Table 2 shows a breakdown of these programs and their budgetary allocations.

In the year 2000, over half of these expenditures (59%) have been concentrated in two programs, the Vaso de Leche (43.1%), and the Comedores Populares (15.8%), both of which provide funds directly to municipalities for the provision of food supplements to low income groups (Cuanto, 2001).

The Vaso de Leche program is operated at the local level by Mothers Clubs or Vaso de Leche Committees. Its function is to provide supplementary food to low income pregnant women and children up to age 6. However, it is common practice, authorized in a recent law (Ley No.27470), to extend benefits to older children (ages 7-13), tuberculosis patients, and the elderly. These are not the appropriate target groups to reduce the levels of chronic malnutrition in Peru. Furthermore, the program is not well targeted to the needy. Nationally, 34% of the extreme poor do not participate in the program, while the percentage of beneficiaries who are not poor ranges from 60 to 68% in most regions of the country, and reaches 94% in Lima (Vasquez and Riesco 2000).

The nutritional value of the supplement provided is low, lower in protein and calories than the supplement in any other government nutrition program (Vasquez and Riesco 2000). Furthermore, food supplements alone cannot address malnutrition. Supplements, even if correctly targeted, must be combined with complementary interventions in order to have an impact on stunting prevalence. The program does have very wide coverage, reaching five million people, and provides a focal point for organizing women's groups. But as presently constructed, it cannot be considered an effective nutrition program. Nor
can the program be considered an effective income transfer program since it fails to reach the extreme poor.

Table 2
Selected Public and Private Food Assistance Programs in Peru (Beneficiary Population and Total Budget)

<table>
<thead>
<tr>
<th>Programas de Instituciones Publicas</th>
<th>Instituciones Responsables</th>
<th>US$</th>
<th>Poblacion beneficiaria</th>
<th>US per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proyecto Wawa Wasi</td>
<td>Promudeh, Pronaa, MINSA</td>
<td>13,019,429</td>
<td>27,000</td>
<td>$482</td>
</tr>
<tr>
<td>Programa Alimentacion Infantil</td>
<td>Pronaa</td>
<td>15,025,901</td>
<td>317,510</td>
<td>$47</td>
</tr>
<tr>
<td>Programa Alimentacion Escolar</td>
<td>Pronaa</td>
<td>25,174,625</td>
<td>904,172</td>
<td>$28</td>
</tr>
<tr>
<td>Programa Comedores populares</td>
<td>Pronaa</td>
<td>25,804,594</td>
<td>897,303</td>
<td>$29</td>
</tr>
<tr>
<td>PANFAR</td>
<td>MINSA (INS-Cenan), Prisma</td>
<td>3,952,571</td>
<td>73,209</td>
<td>$54</td>
</tr>
<tr>
<td>PACFO</td>
<td>MINSA (INS-Cenan)</td>
<td>23,428,571</td>
<td>247,784</td>
<td>$95</td>
</tr>
<tr>
<td>PROMARN</td>
<td>MINSA (INS-Cenan)</td>
<td>na</td>
<td>4,000</td>
<td>na</td>
</tr>
<tr>
<td>PANTBC</td>
<td>MINSA (INS-Cenan)</td>
<td>na</td>
<td>70,000</td>
<td>na</td>
</tr>
<tr>
<td>Desayunos Escolares</td>
<td>MINSA</td>
<td>51,428,571</td>
<td>1,891,600</td>
<td>$27</td>
</tr>
<tr>
<td>Vaso de Leche</td>
<td>Municipalidades-distritales</td>
<td>92,892,571</td>
<td>4,009,739</td>
<td>$23</td>
</tr>
<tr>
<td>TOTAL (includes programs not listed here)</td>
<td>Total</td>
<td>250,726,833</td>
<td>8,442,317</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Programas de Instituciones Privadas</th>
<th>Instituciones Responsables</th>
<th>US$</th>
<th>Poblacion beneficiaria</th>
<th>US per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winay</td>
<td>Caritas</td>
<td>1,177,004</td>
<td>29,163</td>
<td>$40</td>
</tr>
<tr>
<td>Ninos</td>
<td>CARE/Peru</td>
<td>1,224,558</td>
<td>33,040</td>
<td>$37</td>
</tr>
<tr>
<td>Nutricion Infantil</td>
<td>ADRA/OFASA</td>
<td>6,134,313</td>
<td>22,215</td>
<td>$276$²</td>
</tr>
<tr>
<td>Nutricion Infantil</td>
<td>ADRA/OFASA</td>
<td>6,929,672</td>
<td>51,176</td>
<td>$135$³</td>
</tr>
<tr>
<td>Kusiayllu</td>
<td>MINSA, PRISMA</td>
<td>1,836,641</td>
<td>7,200</td>
<td>$255</td>
</tr>
<tr>
<td>TOTAL</td>
<td>Total</td>
<td>11,167,875</td>
<td>120,579</td>
<td></td>
</tr>
</tbody>
</table>

¹CMAN 2001  ²APOYO 2001  ³Cost per household  ⁴Altobelli 1999.

The Comedores Populares, which accounts for 11% of government expenditures on food and nutrition programs, is similarly poorly designed and poorly targeted. Virtually all of the Comedores are located in urban areas, and 62% are in Lima and the Urban Coast (Cuanto 1997), despite the fact that the chronic malnutrition problem in the country is largely rural and concentrated in the Sierra. The goal of the program is to reach pregnant and lactating women and children up to age six. A recent evaluation of the program (that did not address the question of nutritional impact, however) found only 23% of beneficiaries were in the target group (Cuanto 1997) other than in Lima and the Urban Coast, over 95% of the extreme poor are not reached by the Comedores Populares program (Vasquez and Riesco 2000). The design of the program, providing a low cost food supplement without any other services, is inadequate to address nutritional problems.
Other government food and nutrition programs are not directly linked to the reduction of childhood stunting. School feeding programs, for example, do not reach the appropriate target groups of pregnant or lactating women and children under age two years. The two major school feeding programs in Peru, Alimentacion Escolar and Desayunos Escolares, together account for about 30% of government food assistance expenditures. However, these programs serve other distinct purposes. School meals encourage attendance and discourage dropout, and contribute to better learning. Women who are better educated are less likely to have a stunted child. Therefore school feeding could be considered to contribute indirectly, over the long term, to a reduction in stunting.

3.2 Food Assistance Programs Are Poorly Targeted and Overlap in Coverage

Food and nutrition assistance programs are present in 65% of the districts in Peru. According to the APOYO study, 52% of food assistance expenditure is concentrated in urban marginal areas of Lima, with only 41% in rural areas (APOYO 2001). We have seen (above) that the major food assistance programs are very poorly targeted. In relation to chronic malnutrition, 72% of districts with a high prevalence of stunting had some type of nutrition or food assistance program, but 28% of districts with high prevalence of stunting had not received any food assistance program. More surprisingly, 47% of districts that did not have high prevalence of stunting had at least one, and sometimes more nutrition programs (APOYO 2001). The distribution of health and nutrition programs is regressive, with a higher percentage of the benefits going to the higher income population (APOYO 2001), while the distribution of stunting in Peru is highly progressive, affecting primarily the low income population (Wagstaff and Watanabe 2001).

Nationally, 28% of districts with a high prevalence of stunting receive no benefits from government nutrition or food assistance programs, and 47% of districts with low prevalence of stunting have at least one, and sometimes more than one such program.

There is considerable duplication in the provision of services in the area of food and nutrition. In reviewing just seven major nutrition programs, and not including the Comedores Populares or Vaso de Leche programs, APOYO found that 35% of the...
districts in Peru have no program, 41% have one program, 17% have two, and 7% have three or more (APOYO 2001).

The programs are quite inconsistent in their design, ration size and composition, provision of complementary services, and target group. Some programs target only malnourished children; some target high-risk families. Some identify the target group as children up to age five; others target children under three. The range of services provided along with food assistance is also quite variable from one program to another.

Considerable gains in efficiency and effectiveness could be achieved by consolidating the programs, rationalizing their targeting to be consistent with nutritional goals, and modifying them to serve these goals more effectively.

3.3 Program Management is Divided, and Food Assistance Programs are Uncoordinated

As shown in Table 2, multiple programs exist to address similar problems and deliver similar services, and program responsibility and management are divided among many agencies, often in separate ministries. For example, there are two large school feeding programs, Alimentacion Escolar (PAE) operated by PROMUDEH, and Desayunos Escolares, operated by the Ministry of Health. Several food assistance programs targeting mothers and small children are operated by MINSA (PANFAR, PACFO) and others by PROMUDEH (Programa Wawa Wasi). Implementation is, as a result, poorly coordinated. In addition, many programs to address malnutrition are administered by private non-governmental organizations (NGOs), each with its own program design and targeting criteria. These programs have not been treated as part of an integrated strategy to address stunting or malnutrition.

3.4 Monitoring and Evaluation Systems Have Shown Limited Effectiveness, and Systems are Lacking to Make Use of Evaluation Data to Improve Programs

Among the programs reviewed by APOYO, the great majority report that they have systems for collecting data for monitoring and evaluation purposes. All of them report having conducted internal evaluations, and about half (44%) have had external evaluations. However, these programs were largely programs conducted by NGOs. All programs using resources from USAID through PL 480 Title II are required to conduct impact evaluations. Among the food programs managed by the Government of Peru, most collect monitoring data on number of beneficiaries, but few collect information on program impact, and fewer have conducted carefully designed impact evaluations. There has been no systematic evaluation of the Vaso de Leche program, for example, though it is the largest of Peru's food assistance programs, and a recent evaluation of the Comedores Populares did not measure outcomes or impact (Cuanto 1997).

Equally important, there is no system in place by which results of an evaluation would be incorporated into decisions about a program's design or its continuation. A case in point is the recent evaluation of Comedores Populares (Cuanto 1997), which provided
sufficient information to suggest that the program needed drastic modification. But decision-makers have not so far acted on these results.

At present, Peru conducts regular national surveys that collect information on nutritional status, economic status, and program participation, but do not include information on food consumption at the individual level. ENNIV collects information on food consumption at the aggregate level in terms of monetary value, but information is not collected on dietary consumption; it does not provide data on how much is eaten, by whom, and in what form. Such information, in conjunction with data on program participation and economic status, would provide a powerful tool for tracking program coverage and impact at a national and regional level. In addition, specific evaluations have rarely been performed, and those that have, have not used reliable methods and study designs. Evaluation gives great political strength to programs that are found to be effective.

3.5 Intersectoral Coordination at the Ministerial Level is Difficult to Achieve

The APOYO study noted the difficulty that Ministries have in working in multisectoral teams (APOYO 2001). There are structural and financial reasons, and reasons related to the institutional culture of the ministries, that make it difficult for them to establish coordination of action across sectoral boundaries. The problem of stunting by its nature requires participation of multiple sectors, but operational coordination at the level of the Ministry is unlikely to be successful. Inter-ministerial committees for nutrition have had a poor record of success over the past three decades (Levinson 1995). National intersectoral agreement, provision of clear leadership, legal mandates, and financial resources are essential to effective coordination. However, operational coordination of activities from different sectors may need to be carried out at a more decentralized level, with each ministry providing the legal framework, mandate, and financing for activities in its own area of responsibility, and with coordination of implementation taking place at the community level.

3.6 The Health Sector is Weakly Linked to Food and Nutrition Programs

With a few exceptions (PANFAR, PACFO, PANTBC, and PANMARN), the majority of resources given to food distribution programs are not coordinated with the health sector. More critically, most government food programs have no explicit means of coupling food distribution with behavior change communication or other health/nutrition services (e.g., immunization, deparasitization, well-child care). In terms of nutritional impact, food transfers alone are ineffective in achieving sustainable improvements in rates of malnutrition. Food must be combined with complementary local services aimed at improving health and care practices in order to have an effect (Beaton and Ghassemi, 1982; Rogers et al. 1999).

Provision of food supplements, without comcomplementary services, is not an effective strategy to achieve sustained reductions in malnutrition.
Recently, a new Division of Nutrition was created within the Ministry of Health that has been given responsibility for incorporating nutrition into each division of the ministry programs: child health, maternal health, adolescent and adult health programs. However, systems for communication and joint decision-making will be needed if this Division is to be effective.

3.7 The Health Sector Lacks a Community Health Orientation

An important part of a strategy to improve growth and development of Peruvian children is to ensure that communities have access to high quality health services. Indeed many of the activities currently taking place in centralized clinics (growth monitoring and growth promotion services, and as well as promotion of healthy practices) require education and outreach to communities and their members. Currently, public health clinics are often inadequately staffed, and not widely enough dispersed to reach target individuals in local communities with BCC and other nutrition-related services. To build a community health focus, health clinics could work through locally hired community health promoters who could extend the reach of the health system for specific services such as BCC, growth and health monitoring, and outreach. Non-governmental organizations in Peru have many years of experience working successfully with the model of community health promoters. The public sector could build on their experience to establish a system of community health promoters affiliated with the health sector, who would have direct contact with families in their homes, providing outreach, services, and appropriate BCC related to health, hygiene, and nutrition.

3.8 There Is Little Focus On Behavior Change Communications (BCC) that Address the Local Food, Health and Nutrition Situation in Communities

Although nutrition education has been identified by most Peruvian food and nutrition programs as a high priority, there has been little focus on identifying local practices and using these as the basis for targeted behavior change messages.

The cultural and geographic diversity of Peru provides a challenging environment to improving sustainable health and nutrition practices. The promotion of adequate growth and development of children requires understanding the specific barriers to and promoters of behaviors in each community. A strong emphasis on BCC includes formative research on current practices in the local culture, and on the willingness of the population to change specific practices. This process requires the establishment of appropriate capacity building activities and development of specific messages to facilitate the recommended changes in behavior.

Effective BCC also requires a monitoring and evaluation system to track progress in the adoption of the specific health practices, and to identify facilitating factors and constraints. Through the MINSA’s Proyecto Salud y Nutricion Basica, a process for BCC to increase the consumption of iron rich foods was initiated through the health services in
specific pilot districts. After evaluation, if successful, this approach should be expanded in high priority regions, with appropriate ongoing monitoring and evaluation.

3.9 The Provision of Water and Sanitation Services Lacks a Strong Administrative Base Within the Government

In the last decade, Peru has made significant advances in improving the population’s access to water and sanitation. However, there is a wide variation by poverty level, with only 39% of extremely poor households, 68% of poor households and 81% of non-poor households having water connections in their house (ENNIV 2000). There is an even wider differential between urban and rural areas at 88% and 46% respectively (ENDES 2000).

Besides access to basic infrastructure, a pilot program in Cajamarca (APRISABAC) demonstrated that programs that involve an organized community group in the design, building, and long term maintenance and management of water systems, along with education on appropriate use and hygiene practices reduce diarrhea incidence and ensure sustainability of the system (Altobelli and Castillo 2001). Such integrated approaches to the provision of water and sanitation services are rare.

One of the reasons for the low availability of water and sanitation services could be the lack of coordination at the national level with appropriate decentralization to the local level. In September 2000, a new legal framework providing for direct funding from the central level to districts to improve water and sanitation systems was implemented. This law is expected to improve coverage and hence the local, private management and operation of water and sanitation services, particularly in rural areas (OPS 2000). It has not been in operation long enough to have been evaluated.

3.10 Decentralization Efforts Need To Be Expanded

The new government has made a priority of decentralizing the implementation of public sector activities in order to improve their responsiveness to local needs. Implemented effectively, decentralization could allow communities to integrate the activities of multiple sectors according to their own needs.

One model for decentralization that has shown promising results is the Shared Administration Program in the health sector. This pilot program, in effect since 1994, uses an elected board of community members known as CLAS Associations (Local Health Administration Committees), to manage the primary care health center or health post. The program has brought the management of services closer to communities in almost 20% of districts, with the goals of improving administrative efficiency, improving the quality of primary health services, and thereby increasing the demand for and coverage of health services. A key feature of the program is that the committees have the authority to manage their own planning and budgeting. As independent entities, they can seek funding from a variety of sources, and can enter into contracts with service providers.
A strategy to reduce chronic malnutrition could build on successful experiences with decentralization of operational responsibility in the health sector.

Evaluations have shown that facilities managed by CLAS are more able to provide exoneration of fees to the poorest populations, and have improved management of their drug supplies so that more patients have access to and can afford medicines (Altobelli, 1998). Local administration alone will not provide the community health basis for growth promotion programs, but these committees might be in a better position to identify local health promoters or other local needs, and arrange to have these needs met. This program could provide a model for decentralization and local control of related nutrition and health services that are responsive to the needs of their communities.

The success of decentralization depends critically on management capacity at the local level. If the policy of decentralization is to work, the local committees need on-going training in the diagnosis of community health and nutrition problems, identification of possible solutions, local planning, as well as management, supervision, budgeting and the handling of funds.

Decentralization can only work if the local committees are given a clear operational mandate, explicit legal authority to carry out their responsibilities, and adequate funding.

3.11 Opportunities to Build on Successful Models of Program Intervention

Although more than half of government resources devoted to food and nutrition programs are spent on programs that are of limited effectiveness, there are several smaller programs whose design is more comprehensive and based on a better understanding of the determinants of stunting. Among the government programs that meet this description are PANFAR and PACFO, both under the responsibility of the government, and several programs operated by private NGOs, including Wiñay, Project Ninos, and the Programa de Nutricion Infantil (PNI). At a minimum, these programs address the need for food assistance to be combined with behavior change communication and linked to health care services; they involve the promotion of community participation, and they link to interventions in other sectors, particularly agriculture and education. Not all these programs provide direct food supplementation, but all provide health services, community outreach, and behavior change communication aimed at improving child caring practices.

These programs are significantly more expensive per beneficiary than are the Vaso de Leche or Comedores programs, but they are much more likely to be effective. Evaluation of one such program (PNI, operated by ADRA-OFASA) measured a 40% reduction in stunting prevalence over a period of two years, as a result of the program's integrated set of interventions (Altobelli and Gomez, 2000)). If the wide geographic reach of a
program such as the Vaso de Leche could be combined with the careful targeting and integrated service provision of these smaller programs, significant national reduction in stunting could be achieved.

3.12 Strategic Actions Are Needed to Address Institutional Constraints

Clearly, resources could be saved and program effectiveness and efficiency could be improved through reorganization of national level programs, with management consolidated in a single entity. Clear lines of responsibility for decisions about the continuation, modification, and termination of programs would be an essential part of such reorganization. Central functions would include the establishment of guidelines and norms for programs, establishment of performance benchmarks, provision of funds, and provision of technical assistance and training to local entities. Monitoring and evaluation of programs, including rigorous evaluations of program impact, could also be a centrally managed function. There is scope for improving the effectiveness of programs by decentralizing their implementation to the district or community level. Program design itself can be greatly improved, building on successful models that provide targeted services using an integrated approach, and eliminating or redesigning existing ineffective programs, redirecting the resources to programs that work.

Consolidated administration would improve effectiveness and efficiency of food and nutrition programs. Decentralized operation would improve intersectoral coordination and responsiveness to local needs.
Chapter 4. The Strategy

Peru has a unique opportunity at the present time to start the process by which chronic malnutrition can be significantly reduced. With the advent of a new government, there is an opportunity to consolidate the administration of programs, build on demonstrated successes, and eliminate programs that are consuming resources without impact.

4.1 Overview

The proposed strategy is based on the following principles, listed in the box below.

Principles Underlying the Proposed Strategy

- An effective strategy must address the multiple causes of stunting in an integrated way. In particular, the provision of food supplements without complementary services is ineffective. Food supplements should be used only in the context of an integrated program.

- The goal should be prevention of stunting, not recuperation of children already stunted.

- The strategy should be targeted to the geographic areas and the populations that account for the largest proportion of the nation's stunting problem.

- The strategy should be implemented in a decentralized manner for maximum responsiveness to local needs.

- Programs should be continuously monitored and regularly evaluated, with evaluation results incorporated into the design of future programs.

The strategy addresses two fundamentally different issues. First, we propose a specific set of programmatic interventions, based on the specific factors that cause stunting in Peru, and on the experience of successful interventions in Peru and other countries.

These interventions include

- Improving household access to and use of quality health services through expansion of adequately staffed health clinics and health posts and through provision of community-based services;

- Improving household access to and use of clean water and sanitation services;
• A strong focus on improving child feeding and caring practices through behavior change communications developed through investigation of local culture and local constraints and delivered through household visits of community-based health personnel (health promoters) as well as mass media and other channels as appropriate
• Increasing household access to adequate and high quality food.

Second, we propose a set of institutional changes in the organization of food and nutrition assistance. These changes include

• The consolidation of nutrition programs within a single organizational entity;
• Rationalization of existing programs based on evidence of their effectiveness in reducing stunting or achieving intermediate outcome indicators. Elimination or redesign of ineffective programs and the strengthening and expansion of effective ones.
• Development of institutional capacity and human resources to design, implement, monitor and evaluate the effectiveness of programs and policies, and to conduct operational research on alternative program designs;
• Decentralization in the management of the strategy to reduce stunting, with appropriate training and capacity building, legal authority, and financial support, and with concrete and enforceable performance measures.

Implementation of the strategy implies a cost for providing services and micronutrient and food supplements. Additional costs would be incurred in improving management, monitoring and evaluation, training and capacity building, and program-relevant research. The resources to support the cost of implementing the integrated package of services related to stunting are significant. However, the Government of Peru already devotes significant resources to food and nutrition programs. Resources to implement the strategy could come largely from the resources saved by redesigning or eliminating ineffective programs (see Section 4.9). The cost of supporting decentralized management may in part be covered by reduced administrative costs at the central level as program management is consolidated.

The proposed strategy does not directly incorporate broad economic development, poverty alleviation, and food security goals. There is no question that full coverage of social services, improved infrastructure, and intensified poverty alleviation would, in combination, have profound effects on the prevalence of nutritional stunting in Peru. But the independent leverage of a chronic malnutrition strategy on these broader development priorities may be minimal. Furthermore, mounting such efforts within the context of a nutrition strategy would be prohibitively expensive. The strategy proposed here is more limited, but also more focused, and, therefore practical. The actions proposed should significantly reduce stunting. To the extent that they converge with programs to alleviate poverty and enhance household food security, the effect of each strategy would
be enhanced and, together, could result in profound effects on the prevalence of nutritional stunting in Peru.

4.2 Target Groups

Strategic targeting is the only viable alternative because resources are limited. Generalized interventions are not an option. The target populations for the strategy to reduce stunting are, first, children under the age of two years; second, pregnant women, and particularly adolescent mothers. A third priority group is adolescent girls in general, and finally, extremely poor and food insecure households should be targeted because their members are at high risk of stunting.

4.2.1 Children ages 0-2 years

In the short-term, the greatest impact on stunting is likely to be achieved by improving the diet and health conditions of children under age two, with some additional impact possible up to age three. Thus it is important to intervene early to prevent stunting and associated developmental damage.

4.2.2 Pregnant and Lactating Women

Low birth weight due to intrauterine growth retardation (IUGR) is an important risk factor for stunting. Women who consume a nutritionally adequate diet and get adequate rest are less likely to give birth to low birth weight infants.

Lactating women are included as a target group because the nutritional quality of their diets is reflected in the nutrient adequacy of their breast milk. Optimum feeding of infants includes exclusive breastfeeding up to the age of six months. For the first six months of the infant's life, therefore, they depend on the nutritional quality of their mother's milk for the adequacy of their diets.

4.2.3 Adolescent Mothers

Adolescent mothers constitute a particularly vulnerable group among pregnant and lactating women. Girls who give birth while still in their teens have a higher probability of delivering a low birth weight baby and of having a stunted child. Teen-aged mothers accounted for about 15% of births in the year 2000, a number that has been falling (ENDES 2000). These teen mothers are disproportionately uneducated (no education or primary only), and poor. Adolescent girls are not physiologically ready for pregnancy. As a result, adolescent girls who become pregnant require the same interventions as other pregnant women, but are more likely to need special attention.

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8 In countries where there is a very high percentage of low birthweight such as South Asia (30-50% lbw) these priorities may be reversed. In Peru, the percentage of reported LBW infants is nationally is low, about 6%, however in Selva and Sierra areas nearly 40% of women reported not having the information. It may be assumed that women who do not give birth in settings where birth weight is measured are at greater risk than average of having a LBW infant.
The goal, though, should also be to prevent adolescent pregnancy, not just to provide nutritional support to pregnant adolescents. Sixteen percent of girls leave school due to pregnancy (ENDES 2000). The main point of intervention for preventing adolescent pregnancy is improved access to education and to income-earning opportunities. Education is associated with delayed onset of childbearing in Peru, as it is in much of the world; and participation in the labor force increases the opportunity cost of having a child, leading to lower total fertility.

4.2.4 Food Insecure Households and Households in Extreme Poverty

In addition to targeting individuals belonging to particular demographic groups, poor and food insecure households are an important target for intervention. Rates of stunting in Peru have run parallel to rates of extreme poverty, and children in food insecure households are at high risk for stunting.

4.2.5 Adolescent girls

In the medium and longer term, significant impact on stunting will likely be achieved by targeting girls before they reach child-bearing age, and thus increasing pre-pregnancy nutritional status and iron stores. Educational levels of girls are also vitally important. Higher education is associated with later age of first pregnancy, longer interpartum period, and smaller total fertility. Higher education also increases a woman's ability to understand and implement nutrition-related behavior changes messages. Educated women have influence within their households, allowing them to use household resources to benefit the health and growth of her children.

4.3 Points of Intervention for the Target Groups

4.3.1 Children Ages 0-2 years

For children in this age group, the key points of intervention to prevent or to reverse stunting are the following:

- Prevent low birth weight through interventions targeted at the pregnant woman
- Improve breastfeeding practices including period of exclusive breastfeeding and age of introduction of complementary foods through carefully developed behavior change communication
- Improve the quality and nutrient density of complementary foods through behavior change communication and through improved household food availability (e.g., through home production, better purchasing decisions)
- In households that are food insecure or in extreme poverty, consider the provision of nutrient-dense complementary fortified food supplements such as weaning

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9 The authors support the idea of including infant stimulation practices for children 0-2 years to also promote cognitive development. However, since there is not a proven direct link with reducing stunting they are not included as one of the key points of intervention.
foods, combined with behavior change communication and other health and nutrition services

- Ensure that children are given food in such a way that they eat adequate amounts (active feeding; frequency of meals)
- Improve the nutritional quality of the diet: increase amount and quality of protein, dietary diversity especially focusing on foods of animal origin, and micronutrient consumption through improved practices and increased household resources
- Ensure access to appropriate care and treatment during illnesses, with increased feeding as the child recovers
- Ensure access to appropriate preventive care including immunizations
- Promote hygienic practices among households and caretakers, to reduce the incidence of diarrhea and infectious diseases
- Promote preventive measures and appropriate health seeking treatment in areas with endemic malaria and dengue.

4.3.2 Pregnant Women

Key points of intervention for this target group are as follows.

- Treat anemia and other micronutrient deficiencies through improved diet and the delivery of multi-micronutrient supplements to pregnant and lactating women
- Improve the quality and adequacy of the diet, particularly the consumption of foods of animal origin, through behavior change communication, improvement in household resources, and, in cases of extreme poverty, through the delivery of protein and nutrient-dense food supplements combined with education and resource enhancement
- Ensure that pregnant women get adequate rest and do not have excessive physical work burden
- Provide quality prenatal and postnatal care services to identify high-risk pregnancies
- Treatment of hookworm and other parasitic infections, and of malaria in endemic areas.

4.3.3 Adolescent Girls

Recognizing that education services are beyond the scope of the present strategy, key points of intervention are

- Improved access to and use of formal education
- Improved quality and quantity of the diet, particularly foods of animal origin
- Promote access to micronutrient supplements. Particularly important are those containing nutrients found in foods of animal origin: iron (with folate), zinc, vitamin B-12
4.3.4 Food Insecure Households

Again, recognizing that these interventions go beyond the scope of the proposed strategy to reduce stunting, or households in poverty, the key points of intervention are the following.

- Increase home production of food for home consumption
- Improve household purchasing power through employment, self-employment, agricultural production, or other means of income generation
- Increase household access to markets for goods that they may sell or buy
- Increase household access to labor markets
- Increase income-earning capacity through education and training

4.4 Target Regions

Target regions, Rural Sierra, Urban Sierra, and Rural Selva, are selected based on prevalence of stunting and proportion of stunted children residing in the region.

**Communities and districts are selected by**

- Prevalence of stunting >50%
- Prevalence of extreme poverty >50%
- Feasibility of implementing an integrated package of services

The selection of priority regions for implementation of the strategy is based on a combination of stunting prevalence, proportion of stunting accounted for by the region, and feasibility of providing services. Within targeted regions, districts and communities should be selected based on prevalence of stunting where such data are available, on prevalence of extreme poverty, and on the feasibility of implementing the whole coordinated package of needed program elements. Highest priority should be given to districts with greater than 50% prevalence of stunting, and second priority to districts with 30-50%. Data on the prevalence of stunting for districts are available from the Censo de Talla.

4.4.1 Sierra, Rural and Urban

The highest prevalence of stunting in the country, 40%, is in the Rural Sierra, and the Rural Sierra contains over 46% of the total number of stunted children under 5 years of age in the country. All the indicators of health, nutrition, and access to basic services are worse in the Rural Sierra than in any other region of the country. This suggests that, in terms of geographic focus, the Rural Sierra must be a priority intervention area.
The Rural and Urban Sierra together account for fully 58% of all the childhood stunting in Peru (ENNIV, 2000). The Urban Sierra attracts significant migration of vulnerable populations from the surrounding rural areas. Possibly because of this migration of poor rural households, the prevalence of stunting in the Urban Sierra significantly exceeds the rate of extreme poverty. Therefore, the Urban Sierra would be the second priority for regional targeting.

4.4.2 Selva

The Rural Selva, with a stunting prevalence of over 32% in children under 5 years, accounts for 14% of stunting in the nation, but this population is extremely dispersed and difficult to access. It is most cost-effective to target the Rural Selva by improving access to health and related programs in the urban areas of the Selva and by increasing targeted outreach to the Rural Selva to encourage the target population in this area to make use of the available services and programs based in the more urbanized areas. Health programs focusing on behavior change for improved child growth should be developed specifically targeted to the needs and cultural context of this rural population, and health centers in the Urban Sierra should have staff that are familiar with the cultural practices and languages of the rural parts of this region. The use of mass media, particularly through radio, and working with schools to include a nutritional and health component in basic education are other effective means to promote the adoption of sustainable nutrition and health practices.

4.4.3 National Components

Certain actions of the government relevant to the reduction of stunting represent public services that are a national priority. These include the expansion of roads and other basic communications infrastructure to enhance the functioning of markets, improving economic opportunities for the poor; the expansion of availability of water and sanitation and of public health services; and the expansion and improvement of educational services. These are basic services that should be available to all citizens of Peru, and the government has made a commitment to working toward their universal provision. At the community level, the availability of these basic services can make an important contribution to the success of the strategy to reduce stunting and promote growth.

4.5 Elements of the Strategy: Programmatic Interventions

We propose an integrated package of services to address the key determinants of stunting. The package is focused on improving access to and the quality of health services and to water and sanitation services; an intensive focus on appropriate behavior change related to child-care and feeding practices and to self-care of women during pregnancy; and increasing household access to sufficient and high quality food.

The proposed package builds on the models of successful programs in Peru and elsewhere. For example, one relatively comprehensive program, the Programa de Nutricion Infantil of ADRA/OFASA involved many of the elements of the proposed
strategy: community based health services provided through local health promoters, linked to the formal health system; construction and maintenance of water systems and latrines; behavior change communication delivered through home visits of the promoters; provision of food supplements. Involvement of the community was a key part of the program's strategy. This program is estimated to cost $135 per beneficiary (APOYO 2001), or $276 per beneficiary household (Altobelli 1999), but this relatively high cost program achieved a 40% reduction in stunting in a two-year period in the communities where it was implemented (Altobelli 2000). This program is one of the few for which evaluation of impact is available; other data are not available to use for comparison. Nonetheless, these results suggest that such programs are feasible, but require adequate support, both financial and administrative.

Key elements of the proposed package are the following.

### 4.5.1 Increased Use of Quality Health Services

Increased use of health services depends not only on increasing access, but also on ensuring that health clinics are staffed with appropriately trained workers, and adequately supplied with equipment and medicines. We recommend that health centers or health posts employ a community outreach agent who serves as supervisor for community-based health promoters. Health promoters are community residents hired and paid to work in individual communities. The number of health promoters per community depends on the size of the community. Both the community outreach agents and the health promoters require initial and ongoing education and training that is part of the cost of the package.

Services provided by the health system include preventive care such as immunization and deparasitization, curative treatment, the delivery of multi-micronutrient supplements to pregnant women, lactating women, and children through age two, prenatal care to identify high risk pregnancies, and growth monitoring of children.

![Box]

**Food supplementation should be implemented only in conjunction with quality health services including behavior change communication, and only for the most vulnerable groups: households living in extreme poverty with nutritionally high risk groups such as children under 2 years of age and pregnant and lactating women.**

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10 The AIN (Atencion Integral al Nino) program in Honduras and Nicaragua has a goal of employing one health promoter per 20 target families, where the target families are those with a pregnant woman or a child under age 3. This intensive level of interaction has achieved measurable success in increasing the consumption of nutrient dense foods through locally available resources in poor communities, reducing malnutrition rates in the target communities.

11 Currently in Peru, iron-folate and vitamin A are given through the health system to pregnant women and to children (pregnant women receive vitamin A immediately post-partum). There is evidence that greater protective effects would be achieved by delivering a multiple micronutrient supplement including also zinc and vitamin B-12. UNICEF is currently evaluating the impact of multi-micronutrient supplements world wide and results should be forthcoming.
Other services include targeted provision of food supplements based on level of risk of stunting. Risk would be assessed at the community level where prevalence of stunting is greater than 50% and/or the rate of extreme poverty exceeds 50%. It would be based on household risk factors in urban areas and in communities with lower rates of stunting or extreme poverty. Improved outreach to poor urban communities is essential for this strategy, to ensure that the highest risk households have access to the services; supervision is needed to ensure that criteria of eligibility are fairly applied. The food supplements would consist of a nutrient-dense complementary food ("papilla") for children 6-24 months, containing high quality protein and an appropriate micronutrient mix. Supplements targeted to pregnant women should be similarly nutrient dense, containing complete protein and micronutrients. Quantities of supplements provided to pregnant woman should take into account the fact that such supplements are shared among household members; sufficient quantity should be given to accommodate such sharing.

Targeting food supplements based on a child's anthropometric status does not serve the purpose of prevention of stunting. However, it is appropriate to provide food supplements to children under age 2 from low-income households who fail to grow (in length or weight) in two successive growth monitoring visits (typically separated by a period of one to three months), irrespective of their absolute position on the growth chart (that is, irrespective of whether they fall below an absolute cut-off of height for age or weight for age). Such supplements, given in conjunction with behavior change communications and other health services, can permit a child to regain his growth trajectory. Once provided, food supplements should be given for a fixed period of time and discontinued based on the child's age or the length of time he has been receiving supplements. Providing food supplements that are contingent on a child's continued failure to grow risks creating a perverse incentive to withhold food from the child, although this has not been empirically documented.

Food supplements are not the central element of the proposed strategy. Supplements may not be necessary if education and behavior change communication result in improved diets for children. For households not in extreme poverty, food supplements are likely not to be necessary. Education on how to make better use of available household resources to provide an adequate quantity and quality of food to the household may be sufficient to assure that children and pregnant women consume an adequate diet. Food supplements are not and should not be the central element of a strategy to reduce childhood stunting.

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12 An evaluation of the AIN (Atencion Integral al Nino) program in Nicaragua found that behavior change communication, without the direct provision of food, succeeded in improving the nutrient density and frequency of feeding of complementary foods for young children (Grijalva et al., 2001)
4.5.2 Adoption of the Behavior Change Communications Approach

Communication for behavior change is different from health or nutrition education as it is typically practiced. To be effective, behavior change messages should be directed at specific behaviors identified locally, based on formative research into specific local practices, available resources, and physical, social and cultural constraints.\textsuperscript{13}

Behavior change communication depends on direct contact between the educator and the target population. Existing health care personnel are not sufficient to undertake behavior change communication, nor is this the focus of their training. Locally hired health/nutrition promoters, paid through the local implementing agency, are more appropriate to the task. Use of volunteers for this work is not sustainable in the long run. Ongoing training is essential for the continued effectiveness of these promoters. Health clinic staff should be trained to support the behavior change communication and outreach functions of the child growth strategy through participation in the development of BCC messages and the management and supervision of community based health promoters.

In addition to interpersonal communications, a behavior change strategy may also use other channels such as schools, markets, and mass media to promote and encourage the adoption of a particular nutritional practice among a particular target group. A multifaceted approach based on local circumstances will be more likely to address the barriers to individuals and households adopting a particular practice than a strategy based on only one means of communication. Health services may be the entry point for identifying target families when women come for prenatal or well baby care, but the behavior change communication needs to involve a wider range of household members, including fathers and others who may be involved in child care.

Behavior change messages may include care and diet of women in pregnancy, breast feeding, weaning and complementary feeding, child care and feeding practices, household sanitation and hygiene, disease prevention and treatment. Messages should also address the link between children's nutritional status and their future physical and psychological development as part of the strategy to reduce the prevalence of stunting. Several successful programs have also included components to promote earlier mental stimulation of the child, healthy relationships within the family, and good household management.

4.5.3 Increased Availability of Water and Sanitation Services

Provision of clean water and of sanitation services is a key element of the strategy. The mechanism for providing these services will vary based on the locality. In urban areas (for example, in the low-income marginal neighborhoods of the Urban Sierra), it may be

\textsuperscript{13} One such approach, termed the "positive deviance" approach, seeks to identify families in which children are growing well despite high risk factors, and to find out what specific practices contribute to those families' success. A strength of this approach is that the practices are culturally acceptable and feasible in the local setting.
possible to establish connections with the municipal water and sewage system. In rural areas, local construction may be organized through the implementing agency for the strategy, or through the 'nucleos ejecutores' that have been established for that purpose. In any case where a local water and sanitation system is constructed, local groups must be trained to manage and maintain them, and behavior change communication intervention must include appropriate use of the facilities to assure personal and household hygiene.

4.5.4 Increased Access to Adequate, High Quality Food

Targeted provision of food supplements to children 6-24 months and to households with pregnant and lactating women is one mechanism for increasing the household's access to food. Health promoters working with household members can also educate households to make the best use of their resources to obtain an adequate diet. For example, households might alter their food purchases to obtain more nutrient-dense foods; or they might alter their home production decisions to produce, or to retain for home consumption, foods of animal origin or other foods that provide important nutrients lacking in the diet.

There are many public and private sector programs in Peru dedicated to improving household income, purchasing power, or production. Such programs include agricultural extension, small-scale irrigation, credit provision, and other such activities. The local implementing agency could contract for these services in the target communities, with interventions focused on the target households. Coordinating the strategy to prevent childhood stunting with these other programs would improve not only the effectiveness, but also the long-term sustainability of any changes brought about by the program.

4.6 Elements of the Strategy by Region

The target areas that have been identified for the strategy are the Rural Sierra, the Urban Sierra, and the Rural Selva, with the understanding that the strategy to reach the Rural Selva would be based on improving outreach to rural populations by the health system based in the Urban Selva. This strategy is based on the recognition that the Rural Selva populations are too dispersed to be reached directly in a cost-effective way.

In the Rural Sierra, we recommend implementing the entire strategy. This would mean:

- Improving population coverage by the health system, and ensuring that needed services, including immunizations, medicines, micronutrient supplements, and food supplements, are available.
- Employing community outreach agents in health centers and community-based health promoters in the communities.
- Developing an appropriate behavior change communication strategy, including developing messages and material and delivering BCC services to ensure the adoption of sustainable practices.
- Constructing water and sewage disposal systems, and establishing a system to ensure good management and maintenance.
• Establishing or using an already existing local entity to manage the strategy. This entity would seek to obtain for its target communities the services of other public and private sector programs to enhance the resources of target households and communities.

Target communities in the Rural Sierra would be identified based on their prevalence of stunting, with highest priority given to communities with over 50% prevalence, and second priority to communities with 30-50% prevalence. If stunting data are not available, proportion of households in extreme poverty could be used instead.

In the Urban Sierra, target communities would be low-income, marginal neighborhoods. Targeting services in urban areas is more difficult than in rural areas, and may need to be done by neighborhood or household, based on poverty status. Services offered through public health clinics or health posts may be self-targeting to the low-income population to some degree, if better off households make use of private health care. But any provision of food supplements would need to be targeted at the household level based on household or individual risk factors. Targeting to whole communities based only on age and pregnancy status is not feasible in urbanized settings where the population is economically mixed. Also in the Urban Sierra, water and sanitation services may be made available by advocating for the neediest neighborhoods to be linked to the municipal water and sewage systems, rather than constructing local systems.

The strategy for the Rural Selva is somewhat different. Here, outreach by health services to rural populations could be improved by the following means.

• Health centers provide appropriate services, including immunizations, micronutrient supplements for pregnant women and children 6 months to 2 years, prenatal and well-baby care, and food supplements if appropriate.
• As in the case of the Urban Sierra, any provision of food supplements would be targeted only to households in severe poverty and at high risk, since the target group for this intervention is the rural population, not the urban population served by the same health center.
• Health centers would employ at least one community outreach agent with language capability and cultural capacity to work with the Rural Selva populations.
• Behavior change communication messages would be developed specifically to meet the needs of the Rural Selva populations, and health center staff would be trained to deliver those messages appropriately. Since the provision of water and sanitation services to the Rural Selva is not envisioned as an initial part of this strategy, education on sanitation and hygiene would be particularly important. In addition to the health sector, integrating health and nutrition messages into the basic education curriculum, particularly for girls, could be another effective approach to improving nutrition of future generations.
• Efforts would be made to promote the use of these services and good nutritional, health and hygiene practices through appropriate mass communications media.

Annex 1 summarizes the elements of the proposed strategy that would be implemented in each region.

4.7 Elements of the Strategy: Institutional Implementation Issues

4.7.1 Consolidation of Nutrition-Related Programs in a Single Government Entity

It is recommended as part of the strategy that nutrition-related programs be consolidated under a single administrative entity. Such consolidation would conserve resources. Equally important, it would provide a mechanism for decision making about the optimum design of nutrition programs, and would allow for information from program evaluations to be incorporated into the future design of programs.

A consolidated administration would have responsibility for the following.

• Allocating resources to programs;
• Establishing norms and procedures for programs
• Establishing systems for transfer of funds and authority to the local level
• Establishing systems for assuring program implementation, and sanctions for failure to implement according to norms
• Coordinating technical assistance and training for monitoring and evaluation, for management by local administrative entities
• Coordinating program-driven research

There are various options for consolidation. Among the suggestions that have been made by various groups are: centralizing the responsibility for nutrition-related programs in the Ministry of Health (Cuanto 2001; Altobelli 1999) or in the Ministry of Economy and Finance (Cuanto, 2001), or creating a new, privately administered but publicly accountable agency within or outside of government (Vasquez, 2001). As the central activities proposed in the strategy relate to the health sector and its administration, basing the administration of the strategy in the Ministry of Health might be the most appropriate. The key is for these efforts to be consolidated in a single entity, with appropriate technical capacity and authority to make program decisions. The other key element is the delegation of authority and the transfer of resources for implementation to organizations at the district or community level.

4.7.2 Decentralization of Implementation

The new government has placed a high priority on decentralizing responsibility for management of public sector services. The proposed strategy should be implemented at the local level by community-based committees. The advantages of decentralization are several.
• Local committees can ensure that services are provided and provided fairly.
• They assure that service providers are responsive to the needs of the local community.
• Local committees can make judgments as to the relative priorities of different activities, based on the local situation.
• Local committees can coordinate the implementation of the various components of the strategy with other relevant community development activities that serve the goal of reducing stunting.

To be effective, local committees must participate in the assessment of community needs, and in the design of programs, and must have expertise in the management and supervision of contracts and budgets. Committees must be provided with adequate training in these areas, and the training must be ongoing, since members are likely to leave, and new ones added. Training is especially important since the target populations for the strategy are communities with high prevalence of stunting and high rates of extreme poverty --- communities that may be less well endowed with human resources. Local committees need autonomy, but they must have clear and concrete goals set at the central level, and be held accountable for the fulfillment of these goals.

In the proposed model of decentralization, local committees act as private agencies. They can enter into contracts with budgets and performance standards. They have their own budgets, which they manage, and they can seek funding from outside sources for additional activities. They also are subject to performance standards for fulfilling their own responsibilities to implement specific elements of the strategy.

There have been some recent efforts at consolidation of management and decentralization of operational responsibility for public sector programs in Peru. The decentralization of health services management through the CLAS, implemented starting in 1994, was discussed above. The establishment of decentralized, private health management associations has demonstrated success in a number of dimensions. Another experience of administrative consolidation and operational decentralization is the recent reorganization of the School Breakfast Program.

In January 2001, the FONCODES School Breakfast Program was transferred to the National Health Institute (INS) to improve its administration. A food logistics component was added, with responsibility given to Asociaciones Ejecutores Descentralizadas de los Desayunos Escolares (AEDDES), a private non-profit legal civil association directed by a council consisting of local representatives of health, education, and agriculture, and a representative of INS. This group conducts local bidding on food products, based on INS guidelines, with local industries that meet specified technical standards. This allows for local, private management of food acquisitions. The INS has a normative and financial role, while transferring implementation to third parties, and effectively decentralizing the program.
4.7.3 Rationalization of Existing Programs

To implement the strategy, decisions regarding the continuance of current public programs related to nutrition should be made based on careful empirical evaluation of program design and program effectiveness.

For decentralization to be successful, local committees must have sufficient funding, legal authority, and an appropriate mandate from the Central Government for their activities. They should be held to performance standards by the responsible entity in the Central Government.

Half of the Government of Peru’s resources devoted to food and nutrition assistance are concentrated in programs that do not serve nutritional objectives: Vaso de Leche and Comedores Populares

As discussed earlier, over half of the resources nominally devoted to food and nutrition programs are concentrated in two programs, Vaso de Leche and Comedores Populares, that do not serve nutritional objectives, and certainly, given their program designs, do not have the realistic potential to reduce stunting. In their present form, these programs are using resources that could be used to support programs that provide a more effective mix of services, and are more appropriately targeted, as proposed in this strategy. There is great potential for redirecting the resources currently spent on these programs, and possibly on others if they are evaluated and found to be ineffective, whether through elimination or restructuring. The utility of both of these existing programs is that they serve as a focal point for the organization of women's groups, that might be used in the implementation of a newly designed community-based strategy.

Currently the Government of Peru is undertaking various steps to reorganize programs such as Vaso de Leche, including creating national norms for improved administration, better targeting to the socio-economic vulnerable populations, enhancing the participation of local communities, incorporating health education, and establishing monitoring and evaluation systems. These are important and necessary steps and it is hoped that the guidelines presented in this strategy serve to guide these efforts.
4.8 Enhancing Institutional Capacity to Implement the Strategy

4.8.1 Monitoring, Evaluation, and Program-Driven Research

To ensure the effectiveness of the strategy, a system of monitoring and evaluation is essential. Through a systematic program of operational research, the effectiveness of various elements of the strategy may be continuously improved, thereby directing resources appropriately. Program managers at every level from local to national often believe that devoting resources to evaluation represents a diversion of resources that could better be used to provide services, but this is not correct, since continuing effectiveness can only be assured through regular evaluation.

Therefore, we recommend that a fixed percentage of the budgets of all programs that are part of the strategy be explicitly set aside for evaluation, and that evaluations, using these resources, be mandated by law. A typical recommendation is about 2% of program budgets, but one Peruvian non-governmental organization allocates 5% to evaluation, and finds that this is not a generous amount. The amount to be set aside for evaluation depends on the size of the overall budget. For large programs, 2% may be sufficient, but smaller programs may require the larger percentage. A system to provide technical assistance to the design and implementation of evaluations should be developed at the central level, to assure that the evaluations are of high quality and produce reliable results. Note that these resources are to be spent on impact evaluation; monitoring of program implementation is a management function that should be included in the program's operational budget.

Evaluation focuses on the question of whether the program achieved its intended impacts, which may be intermediate outcomes such as evidence of behavior change, reduction in rates of diarrhea and infectious disease, improved dietary quality, as well as achievement of reduced stunting in children. Evaluations should include information to permit an analysis of the reasons for a program's degree of effectiveness. Evaluations funded by this mechanism should be made publicly available, to increase the likelihood that evaluation results will be used.
Impact evaluation presupposes that programs implemented as part of the strategy are designed with clear and measurable intended outcomes. Evaluation is important, but equally important is careful program design and conscientious management of implementation that uses the results to improve program performance.

**Impact Indicators**

The key impact indicator for a strategy to improve child growth is, of course, reduction in the prevalence of stunting in the target population. Although the primary target group is children under the age of two, the impact of the strategy at the community level should be measurable in older children. A successful intervention among 0-2 year olds will show impact among these same children at age 3-5 years. Over time, improvements should therefore be seen in the Censo de Talla of children entering primary school. Increased frequency of the Censo de Talla (now conducted only every six years) would allow for closer tracking of the impact of the strategy. Teachers, who are already trained to weigh and measure children, could do so at the beginning of each school year, if there were a system in place for aggregating these data to provide an annual indicator of change in stunting prevalence. Alternatively, if school health services were strengthened, school nurses or school health personnel could perform this function.

**Intermediate Outcome Indicators**

Intermediate indicators of success must also be monitored. These may include direct measures of maternal and caretaker behavior, indicating that the practices promoted within the behavior change component of the strategy are being performed. Behavior change is critical to the longer-term sustainability of the impact of programs to address...
stunting. Other indicators of program success would include improvement in the diet of target groups---better dietary variety, increased consumption of animal products and other nutrient rich foods, adequate quantity; and in rates of diarrhea and infectious disease among children in the target age group. Increased availability and use of health and of water and sanitation services would be an intermediate indicator of the potential effectiveness of the programs. A suggested list of intermediate outcome indicators is shown in the box below.

Suggested Intermediate Outcome Indicators

- Dietary diversity, including foods of animal origin, measured for the household, children 6-24 months, and women
- Percent of children 0-6 months exclusively breastfed
- Percent of children ages 6-24 months with appropriate complementary feeding
- Percent of children 0-24 months continuously breastfed and given appropriate complementary food during and after illness
- Percent of pregnant women who attend prenatal care
- Average number of prenatal visits prior to delivery
- Percent of pregnant and lactating women and children 6-24 months receiving micronutrient supplements
- Percent of children who had diarrhea in the last two weeks
- Percent of children who had fevers or other infections in the last two weeks
- Percent of households with appropriate hygiene practices

Monitoring systems would also collect information on the management and implementation of programs and on the delivery and quality of services. These are not outcome indicators, but are important for understanding why outcomes and impacts were or were not observed.

Suggested Monitoring Indicators

- Progress in the consolidation of administrative responsibility for programs to reduce chronic malnutrition
- Establishment of evaluation capacity at the central level
- Number of program impact evaluations performed
- Establishment of legal and administrative frameworks for the transfer of resources and authority to local administrative committees
- Percent of local administrative committees formed, trained
- Percent of communities with clean water and sanitation systems
- Percent of health centers with community outreach agents
- Percent of communities with trained health promoters working
- Percent of promoters receiving monthly or bimonthly visits
Use of Control Groups

To measure program impact, carefully designed evaluations using control groups are essential. Control groups may be areas in which the coordinated set of programs is planned but has not yet been implemented. Comparison data from control groups is needed in order to know whether the strategy is having an effect, and what the size of the effect is. Such information can also be used in comparing the effectiveness of differing approaches to implementing the strategy in terms of their effectiveness and cost-effectiveness.

Program-Driven Research

The proposed strategy represents a long-term commitment on the part of the Government of Peru and international donors to improving the growth of children in Peru. Its implementation also provides an opportunity to identify specific approaches that are most effective in the widely varying social and cultural contexts of the country, so that these can be expanded. The utility and effectiveness of the research component will depend on its appropriateness to the needs of the field-based programs, and the extent to which there is a mechanism by which data-based decisions can be applied to the design of new or ongoing programs. This system of feedback may be coordinated centrally, but must be linked to community level experience.

Program-driven research implies research that is based on question that arise from field experience. The need for such research goes beyond program evaluation, which is also essential for the success of the proposed strategy. Evaluation focuses on programs currently in operation, while program-driven research may test, on a pilot basis, alternative approaches not currently operating in the field.

4.8.2 Development of Survey Research Capacity in Food Consumption and Dietary Intake

Two major surveys are undertaken regularly in Peru, the ENDES (implemented every four years since 1994) and the ENNIV (implemented every three years since 1991). Both are valuable sources of information, but neither provides data on food consumption at the level of the household and vulnerable individuals. The lack of food consumption information is a barrier to designing effective programs, and to monitoring change in diet as a result of the BCC component of the strategy. It is recommended that dietary data on households and selected individuals be collected in conjunction with one of the existing surveys, so that it could be combined with information on household income and program participation, and with information on health and nutritional status. This type of data would provide valuable detail for use in designing effective programs to improve nutritional status of the population.
Training and Capacity-Building for Monitoring, Evaluation and Research

The design of monitoring and evaluation systems requires training and local capacity building, not only in how to design the data collection systems, but even more important, in how to make use of the information these systems produce. Local implementing groups, in addition to needed training in management (see below), may need training in the use of monitoring and evaluation data for local program improvement. Agencies or organizations implementing local programs will need training in appropriate techniques of data collection (weighing and measuring children, measuring dietary intake, measuring behavior), as well as in the efficient use of such data.

The provision of appropriate, locally relevant training may need to be a centralized function, possibly within the Ministry of Health or other entity with responsibility for the growth promotion strategy.

4.8.3 Public Accountability

The results of program evaluations, and information on changes in the prevalence of stunting, both nationally and by region, should be made widely available and publicized within the country, to generate demand for the services that are part of the strategy. This should be part of a wider campaign to raise the level of awareness in the country of the importance of combating childhood stunting. Results of periodic evaluations and of surveys that include data on stunting should be published in the news media, including newspapers, radio and television, and on the internet. In this way, different regions of the country will be aware of their success in reducing childhood stunting relative to other regions, and the population will be conscious of national progress toward the goal of eliminating childhood stunting.

4.8.4 Training and Capacity Building

There are several elements of the strategy that require investment in training and capacity building:

Local Management

The strategy is to be implemented by agencies or committees at the local or district level. Such agencies (like the CLAS) will be composed of local representatives who will need to be trained in the design, operation and management of programs, management and accountability for financial resources, contracting, and supervision.

Development of Behavior Change Communications

The development of locally relevant, contextually appropriate behavior change messages based on successful strategies for child care and self-care of mothers, requires explicit
training of health care workers and community leaders in how to implement positive deviance, trials for improved practices, or similar kinds of studies and use them to develop messages and identify the appropriate channels for delivery to ensure practices are adopted.

**Monitoring and Evaluation and Program Driven Research**

Capacity building for monitoring and evaluation includes training in the design of monitoring and evaluation systems, in ways to ensure that such data are used to improve the design of ongoing or future programs. Training in the selection of data to be collected, and in measurement techniques for the key outcome and process indicators, is also critical. Training should be provided to program managers and to local committees. At the national level there will need to be trained technicians responsible for the monitoring and evaluation system.

4.8.5 **Integration of New Research Findings and Development of National Research Capability**

Communication between nutrition researchers and policy makers, along with a willingness to update interventions based on the results of both monitoring and evaluation of specific programs and on new research knowledge are important components of a successful national strategy.

The field of nutrition continues to grow and improve through basic and epidemiologic research by trained researchers in the University and in Research Institutes. It is critical that the developers and implementers of a national strategy continue to update thinking on appropriate interventions. This includes careful consideration of the monitoring and evaluation data described above, to expand successful programs and to improve or close those with no effect. In addition, however, data from scientific studies that illuminate our understanding of nutritional processes should also be included. For example, research to determine the optimal mineral-vitamin preparations to reduce low birth weight, or the bioavailability of differing methods of fortification, is of direct relevance to the strategy.

Although internationally published research is useful, inputs to improving capacity in nutrition research are important within the country so that research questions specific to the Peruvian context may be addressed to solve specific program-relevant problems. In addition to improving expertise in monitoring and evaluation, more research capacity on both biologic and behavioral causes of malnutrition is important. A better understanding of dietary intake behavior and the relationship between various dietary patterns and nutritional status would be of great assistance in understanding the causes of stunting in specific regions of the country, and in designing the most effective interventions to address them. This type of research requires an investment in the training of scientists in nutrition, food composition, dietary assessment methodology and nutritional epidemiology.
Available figures on the cost of program interventions are inconsistent from one source to another, (see, for example, Vasquez and Riesco 2000, APOYO 2001, CMAN 2001, Altobelli 1999). As a result, it is difficult to arrive at an accurate estimate of the cost of the proposed strategy, including an integrated package of direct services in the Rural and Urban Sierra, a package of health center-based services directed at the Rural Selva (but available to all Selva households), and the related national-level costs involved in training and capacity building, significantly improved monitoring and program evaluation, program-driven research, and administration and supervision. We know that estimates of the costs of integrated nutrition/health/food security programs show a wide range, from US $250 to $275 or even more per household.\textsuperscript{14} Available information on program costs does not provide enough detail to know exactly what costs are included in the figures given.

Furthermore, there have been almost no well-designed evaluations permitting any sound estimate of cost-effectiveness. In the present document, our estimates of expected impact are based on limited information on programs in Peru, and on international experience with similar programs.

The population of Peru is about 25 million; the average household size is approximately five members, so there are approximately 5 million households in the country.

The Rural Sierra accounts for 22\% of the population, or approximately 1.1 million households. We estimate that half these households have either a pregnant or lactating women or a child age 2 or under. The prevalence of stunting in the Rural Sierra is 40\%. Applying these percentages yields a very rough approximation of the number of target households: 220,000 households in the Rural Sierra. The Urban Sierra accounts for 13\% of the total population, and has a stunting prevalence of 24.3\%. Using the same estimate of half the households with pregnant or lactating women or children age 2 or under, we estimate a target population of 78,975 households.

Using the same approach, we estimate that there are 30,750 target households in the Urban Selva, and 56,700 target households in the Rural Selva. Recall that the proposed strategy is to reach the Rural Selva by improving outreach and the quality of health services in the Urban Selva. However, it would not be possible, nor desirable, to

\textsuperscript{14} The estimated cost per household of an integrated package of services similar to the one proposed here, is taken from the Programa de Nutricion Infantil of ADRA/OFASA: $276 per household (Altobelli, 1999). This cost figure of $276 includes the following: 1) community based health and nutrition education 2) training, supervision and support for community health promoters; 3) nutrition and health services such as growth monitoring, preventive health services such as vaccinations and micronutrients 4) provision of food supplements to all young children under age 3 years and pregnant and lactating women 5) home visits by a community health promoter to follow up with malnourished children 6) provision and management of “botiquines comunales” and 7) infrastructure development and training in community management of water and sanitation services. The cost includes administrative overhead. For comparison, the Wawa Wasi program has an estimated cost of $480 per beneficiary (see Table 2).
withhold services from eligible urban households using health services. Recall also that the package of services proposed for the Selva is less intensive that that proposed for the Sierra.

Of course, the strategy involves not only the local implementation of the integrated package of services; it also requires a substantial investment in human resource development through education and training, as well as expenditures on monitoring, evaluation, and research.

Using these estimates of the number of target households, and information on the range of costs of programs that provide integrated services, and allowing for the fact that as much as a quarter to a third of program costs would be devoted not to direct services but to the support services mentioned above, we can see that even using high estimates of program costs, the cost of the proposed strategy would not exceed the level of resources currently devoted to nutrition and food assistance in Peru.

Of course, not all the resources currently spent on such programs could be reallocated to the proposed strategy. There are food programs in Peru, such as school breakfast and lunch, for example, that may serve worthwhile goals, even though they would not affect stunting prevalence. Based on our estimates, the continuation of effective programs would not be jeopardized by implementation of the strategy to reduce stunting.

The allocation of resources to nutrition and food assistance programs, whether related to the strategy to reduce stunting or not, should be based on careful evaluation of program effectiveness and assessment of cost-effectiveness. Particularly because of the lack of good program evaluations, it is important that decisions about the continuation, expansion, or elimination of programs over time be based on sound analysis of monitoring, evaluation, and cost-related information.

Furthermore, it is neither possible nor wise to try to implement the strategy throughout the country at the same time. Implementation should be phased in gradually, with appropriate careful monitoring and evaluation of the program in its pilot phase.

Although these numbers are roughly estimated, they do suggest the financial feasibility of implementing the proposed strategy.
The specific cost elements of the strategy are as follows.

- A community outreach agent (supervisor of health promoters) in each health center
- An average of two community-based health promoters in each community
- Cost of supervision of health promoters by health or nutrition professionals, monthly
- The cost of inputs: micronutrient supplements (all pregnant and lactating women and children 6 months to 2 years), food supplements (targeted to highest risk communities in Rural Sierra, to highest risk individual households in Urban Sierra and in the Selva)
- The cost of scales and height boards and educational materials for the health promoters
- Training of community health personnel, estimated annually
- The cost of conducting formative research in representative communities in each area where the strategy is implemented, to develop BCC messages
- Implementation of the behavior change programs including the assessment of existing materials and the development and printing of new educational and training materials to be used by the health promoters, community leaders, teachers, and mass media where appropriate
- Training for the community-based committee implementing the strategy at the local level: one initial training, and ongoing training estimated annually
- Cost of construction of community water systems and latrines (rural Sierra). The cost of linking to the public water and sewer network is a municipal responsibility in urban areas.
- Training and support for the local group managing the maintenance of the water and sanitation system (Rural and Urban Sierra)
- Cost of ongoing monitoring and regular periodic evaluation, estimated as a percentage of the cost of programs providing direct services (minimum 2% of the annual budget)
• Cost of disseminating the results of evaluations and periodic household surveys that provide relevant data (Censo de Talla, ENDES, ENNIV, other surveys)
• A budget for operational and other program-driven field research

This listing assumes that other sectors are responsible for incurring the costs of expanding and improving educational services, including incorporating nutrition into the school curriculum; expanding the availability of health centers and health posts, and assuring availability of staff; improving national transportation and communication infrastructure; investing in improved food security and in poverty reduction.

4.10 Expected Impact

**Goal: Reduce the prevalence of stunting nationwide by 30% within the decade.**

The goal of the program is to reduce the prevalence of stunting nationwide by 30% before the year 2010. This assumes a 50% reduction in the areas targeted with an intensive package of services (Rural and Urban Sierra), a smaller reduction of 20% in the Rural and Urban Selva, and a ten percent reduction in the rest of the country based on increased awareness of the problem due to publicity, and on the expectation of modest economic growth.

Progress toward the achievement of this goal should be monitored on an ongoing basis at the national level. As suggested in the APOYO report, stunting prevalence should be measured in children over age 2. In younger age groups, children may be in the process of becoming stunted, but their growth retardation is not yet measurable. Changes in the prevalence of stunting should be measured by district as well as region, to compare the effectiveness of the strategy in different locations.

Intermediate indicators of the effectiveness of the strategy include reduction in rates of diarrhea and infectious diseases in children, indicators of improved access to and use of health services and water and sanitation services, improvement in diet, and adoption of recommended behaviors. Table 3 provides a list of suggested indicators for measuring the effectiveness of the proposed strategy to reduce chronic malnutrition.
<table>
<thead>
<tr>
<th>Category</th>
<th>Indicator</th>
<th>Collection</th>
<th>Local Level</th>
<th>Outcomes</th>
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<tbody>
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<td>Nutritional Status</td>
<td><strong>Impact Evaluation Monitoring</strong></td>
<td><strong>Nutritional Status</strong></td>
<td>Annual Level</td>
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<td>% decrease of children 24-60 months with HAZ&lt;-2</td>
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<td>% decrease in anemia among women of reproductive age and children &lt; 5 yrs</td>
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<td>% children 0-2 year with WAZ&lt;-2</td>
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<td>% children 0-24 months who had an episode of diarrhea in the last two weeks</td>
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<td>Behavioral Outcomes</td>
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<td>% children 0-6 months that are exclusively breastfed</td>
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<td>% children 0-6 months that are exclusively breastfed</td>
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<td>Dietary Outcomes</td>
<td><strong>Dietary Outcome</strong></td>
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<td></td>
<td>Children’s diets are adequate in calories, high quality protein and micronutrients.</td>
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<td>Pregnant and lactating women consume adequate diets.</td>
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<td>Pregnant and lactating women consume adequate diets.</td>
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Table 3: Suggested Impact and Process Indicators for Reducing Chronic Malnutrition
<table>
<thead>
<tr>
<th>Category</th>
<th>Annual</th>
<th>Process Monitoring - national</th>
<th>Community Monitoring - local level</th>
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</thead>
<tbody>
<tr>
<td>Collection</td>
<td>Indicator</td>
<td>Collection</td>
<td>Indicator</td>
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<td>and authority to local administrative committees</td>
<td>Establishment of legal and administrative frameworks for the transfer of resources</td>
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<td>% Progress of impact evaluations performed</td>
<td>% Progress of evaluation capacity at the central level</td>
<td>% Program impact evaluations performed</td>
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<tr>
<td>Reduce chronic malnutrition</td>
<td>Process in the consolidation of administrative responsibility for programs to</td>
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<td>Annual</td>
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<tr>
<td>% children 0-2 years in growth monitoring program</td>
<td>% children 0-2 years in growth monitoring program</td>
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<td>% children 6-24 months following monthly or bimonthly supervision visits</td>
<td>% children 6-24 months following monthly or bimonthly supervision visits</td>
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<td>% health centers with community outreach agents hired and trained</td>
<td>% health centers with community outreach agents hired and trained</td>
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<tr>
<td>% health centers with local implementation committees organized and trained</td>
<td>% health centers with local implementation committees organized and trained</td>
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<td>% households with access to safe water and safe sewage disposal</td>
<td>% households with access to safe water and safe sewage disposal</td>
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</table>

Table 3: Suggested Impact and Process Indicators for Reducing Chronic Malnutrition
4.11 Reducing Chronic Malnutrition in Peru: "Mission Possible"

Peru is now at a moment of opportunity. A new government has taken office, with a commitment to improving the well being of the needy and disadvantaged, and with an explicit goal of reorganizing government services and decentralizing their implementation where possible. Peru has a long-standing commitment to providing food and nutrition assistance to its population, as is indicated by the wide range of existing nutrition programs, and the present government will not pull back from that commitment.

The road to reduced chronic malnutrition is clear. The actions we propose in this strategy have been suggested by others: consolidation of program administration at the central government level; decentralization of implementation and management; improved targeting and more rational design of programs, including an integrated package of services; incorporation of effective monitoring and evaluation into program management and program design. The need for integrated, community based health and nutrition programs emphasizing behavior change communications, and the pressing need for improved access to and quality of public services --- health, water and sanitation, education --- have been well recognized. Poverty alleviation and the promotion of food security have been identified as national priorities.

Resources to implement the strategy are available. A rough estimate of the cost of the proposed strategy indicates that it represents less than half of current expenditures on food and nutrition assistance programs, and even a superficial analysis of current programs suggests that there is ample scope for redirecting these resources from ineffective to effective, well-designed interventions.

What is needed is commitment, public support and accountability, and political will. A broad effort to publicize the seriousness of the chronic malnutrition problem in Peru, and its importance as a constraint to economic progress, should gain public support for the actions needed to implement the strategy. If the strategy is implemented successfully, it will be possible to maintain public support by wide reporting of indicators of progress. Commitment to the goal of reducing chronic malnutrition has been expressed at the highest levels of the government. The government will need to establish clear priorities, concrete plans of action, benchmarks for progress, and an effective system for allocating resources based on these.

With these elements in place, a significant reduction in chronic malnutrition within the decade, and its consequent improvement in human welfare and national economic potential, is not only possible; it is truly an achievable goal.
### Annex 1: Summary of Intervention and Advocacy Strategies

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Rural Sierra</th>
<th>Urban Sierra</th>
<th>National</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase community orientation and outreach capacity of health services. (Financing of one community health agent per clinic, culturally sensitive to the population of the rural areas)</td>
<td>Increase quality of health services</td>
<td>Increase quality of health services</td>
<td>Increase quality of health services</td>
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<tr>
<td>Increase community orientation and outreach capacity of health services. (Financing of one community health agent per health post to supervise 5-6 communities)</td>
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<tr>
<td>Financing of national nutrition programs</td>
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<tr>
<td>Consolidation and strengthening of existing national nutrition-related programs.</td>
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<tr>
<td>Financing of weighing scales, height boards, and growth charts</td>
<td>Financing of national nutrition-related programs.</td>
<td>Financing of national nutrition-related programs.</td>
<td>Financing of national nutrition-related programs.</td>
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<tr>
<td>Financial support to permit exoneration from health service fees for low income households, immunizations and micronutrients for children under 2 years of age, micronutrients for pregnant and lactating women</td>
<td>Financial support to permit exoneration from health service fees for low income households, immunizations and micronutrients for children under 2 years of age, micronutrients for pregnant and lactating women</td>
<td>Financial support to permit exoneration from health service fees for low income households, immunizations and micronutrients for children under 2 years of age, micronutrients for pregnant and lactating women</td>
<td>Financial support to permit exoneration from health service fees for low income households, immunizations and micronutrients for children under 2 years of age, micronutrients for pregnant and lactating women</td>
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<td>Consolidation and strengthening of existing national nutrition-related programs.</td>
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<td>Financing of national nutrition project monitoring and evaluation and operations research: capacity building and implementation</td>
<td>Financing of national nutrition project monitoring and evaluation and operations research: capacity building and implementation</td>
<td>Financing of national nutrition project monitoring and evaluation and operations research: capacity building and implementation</td>
<td>Financing of national nutrition project monitoring and evaluation and operations research: capacity building and implementation</td>
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<tr>
<td>Interventions in the Rural Sierra would be introduced and gradually expanded to full coverage over a five year period.</td>
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<td>Annex 1: Summary of Intervention and Advocacy Strategies</td>
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<tr>
<td><strong>National</strong></td>
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<td>Financing of BCC formativeresearch and materials production and distribution of nutrition policies and plans on nutrition, health, and hygiene.</td>
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<tr>
<td>Advocacy for full implementation of plans for water and sanitation services in marginalized low income communities.</td>
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<td>Advocacy for full implementation of targeted food supplementation for children under two (by community) based on stunting prevalence or levels of extreme poverty.</td>
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<tr>
<td>Advocacy for full implementation of plans for national policies and plans on nutrition, health, and hygiene.</td>
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| **Rural Sierra**                                       |
| Financing of BCC formativeresearch and materials production and distribution of nutrition policies and plans on nutrition, health, and hygiene. |
| Advocacy for full implementation of plans for water and sanitation services in marginalized low income communities. |
| Advocacy for full implementation of targeted food supplementation for children under two (by community) based on stunting prevalence or levels of extreme poverty. |
| Advocacy for full implementation of plans for national policies and plans on nutrition, health, and hygiene. |

<p>| <strong>Urban Sierra</strong>                                       |
| Financing of BCC formativeresearch and materials production and distribution of nutrition policies and plans on nutrition, health, and hygiene. |
| Advocacy for full implementation of plans for water and sanitation services in marginalized low income communities. |
| Advocacy for full implementation of targeted food supplementation for children under two (by community) based on stunting prevalence or levels of extreme poverty. |
| Advocacy for full implementation of plans for national policies and plans on nutrition, health, and hygiene. |</p>
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<th>National</th>
<th>Rural Sierra</th>
<th>Urban Sierra</th>
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<td>Operations research on the feasibility, effectiveness and cost of targeted small scale income generating activities for particularly food insecure households.</td>
<td>Non-budgeted advocacy in rural households particularly food insecure.</td>
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Annex 1: Summary of Intervention and Advocacy Strategies
Annex 2
Study Participants

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*Other Persons Interviewed and Consulted*
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